

15
Med.
A

16.

1

THE
AMERICAN JOURNAL
OF THE
MEDICAL SCIENCES.

EDITED BY
EDWARD P. DAVIS, A.M., M.D.

NEW SERIES.

VOL. CV.



194/55-
9.2.25-

PHILADELPHIA:
LEA BROTHERS & CO.
1893.

R
11
A5
m.s.
v. 105
cop. 2

Entered according to the Act of Congress, in the year 1893, by
LEA BROTHERS & CO.,
In the Office of the Librarian of Congress. All rights reserved.

DORNAN, PRINTER,
100 North Seventh Street, Philadelphia.

J

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES.

JANUARY, 1893.

THE ALBUMINURIA AND THE BRIGHT'S DISEASE OF URIC
ACID AND OF OXALURIA.¹

BY J. M. DA COSTA, M.D., LL.D.,
OF PHILADELPHIA.

THE more we study albuminuria and Bright's disease the more we are struck with variations from the ordinary type, and the more evident it becomes that advancing knowledge will separate still other groups than those with which we are at present acquainted. By their study we may learn that they not only have distinctive origins, but lead to significant pathological changes, and manifest themselves, even early, by recognizable clinical features. One of these groups that has attracted my attention for some years, and that is very inadequately known, is the one originating in excessive uric acid formation or in oxaluria, and it is to this group that I here desire to call particular attention, and to examine, in the light of experience with a number of cases watched for long periods, the beginning of the malady, the pathological conditions produced, the special signs which distinguish it, and the treatment that is most helpful.

It may best illustrate my meaning if I first describe a few cases that taught me the value of this kind of research, and that familiarized me with the differences which these particular forms of albuminuria and

¹ The groundwork of an address delivered before the Pathological Society of Philadelphia, October 27, 1892.

Bright's disease possess. One of the most striking of these cases may be briefly told :

CASE I.—A well-known professional man consulted me about four years ago, suffering from indigestion, marked flatulence, and constipation. He was very nervous, much alarmed about himself, and greatly annoyed by an irritability of the bladder. Albumin was found in small quantities in the urine, as were tube-casts of hyaline character. The albumin was most marked in the afternoon urine. Repeated examinations showed much the same thing, except that on one occasion hyaline and a few epithelial casts were seen without albumin being detected. The acid urine, the specific gravity of which was never below 1022, and frequently upward, often deposited quantities of brickdust. Extremely heavy sediments were noticed after drinking a glass of beer in the evening. The patient was very nervous about himself and despondent, and all work became irksome. A European trip and a carefully regulated diet, largely lessening the nitrogenized substances, did him great good. For two years there has been no trace of albumin in the urine. Previous to its disappearance, it was only detected by the turbidity with acetic acid and boiling, and was not found by nitric acid. In an examination made fourteen months ago by a professional chemist who had previously repeatedly found albumin, the urine is spoken of as intensely acid, as containing excessive amounts of uric acid, but without a trace of albumin or of sugar.

The patient consulted me recently again, being much annoyed by irritability of the heart and pulsation of the abdominal aorta. I found no organic disease of either. The second sound of the heart was sharply defined, the temporal arteries were full and prominent, suggesting atheroma; indeed, I had so noticed them before, but the pulse did not indicate this, being small and of doubtfully increased tension. His nervous system was again disordered; he had many of the nervous symptoms of lithæmia. He dreaded going into crowds and coming into contact with people, and was much disturbed about his own condition. The urine was intensely acid, depositing urates, but it did not contain a trace of albumin, not even when boiled with acetic acid. The irritability of the bladder had passed away. Strict diet, chiefly of vegetables and milk, is again doing good. He is keeping the urine free by the use of Poland water or of Londonderry Lithia, and is taking systematic exercise in the open air. The circulation is being controlled by aconite, and his improvement is very marked.

In the case to follow, the symptoms were so much like those of ordinary Bright's disease, from which the patient supposed himself to be suffering, and the albuminuria was at first so decided and so persistent that it was only by a close study of the symptoms for some time that their true meaning was discerned.

CASE II.—J. H. M., about forty-five years of age, suffered at one time from irritability of the bladder, due to a stricture which Dr. Keen cured by dilating. When first seen by Dr. Keen, who subsequently referred the case to me, the urine was found to be normal. Mr. M. was a very nervous man, greatly troubled with flatulent dyspepsia; indeed, his chief annoyance was the constant belching and the intestinal rumbling. He

was also a most pronounced neurasthenic, easily depressed, and dreading greatly enlargement of the prostate gland, which, however, was not found to exist. Early in December, 1890, albumin was detected in the urine, of which an accurate examination was made, at Dr. Keen's request, by Dr. Coplin, with the result of finding marked amounts of albumin with hyaline and epithelial casts in an acid urine of higher specific gravity than normal, and exhibiting abundant evidence of crystalline excretion. I placed him on a strictly regulated diet, largely of milk and such green vegetables as he could digest, gave him occasional laxatives, directed the use of Poland water, and, off and on, he also took Basham's mixture. He slowly improved, the amount of albumin lessening and the specific gravity decreasing. A useful prescription proved to be papoid and soda, under which the intestinal indigestion and flatulency were greatly improved, so much so that he himself became encouraged. Further improvement took place by a visit to Capon Springs in the summer, during which he passed large quantities of reddish sand, as he called it. He never had dropsy.

About a year after I first saw him there was no albumin to be found in the urine on several tests. In truth, he felt himself so much better that he stopped his visits during the winter, keeping up in the main, however, his diet. He was never entirely free from his dyspeptic symptoms.

In April, 1892, he saw me again, having been subjected to very confining work, and being much annoyed by the belching and the other gastro-intestinal symptoms. His tongue was coated; he was constipated, and was once more very nervous. But an examination of the urine showed that his kidneys were not much deranged. There was, it is true, some deposit of urates, yet only the faintest trace of albumin, none at all with nitric acid, the slightest turbidity on boiling with acetic acid, and a very faint cloudiness when tested with picric acid. I put him again on a stricter diet than he had been lately following, and more like that which had been originally directed; ordered him phosphate of sodium and light diuretic waters, and insisted on systematic exercise. He again decidedly improved, and when I saw him in October not the slightest trace of albumin could be found in the urine either with nitric acid or with picric acid, or boiled with acetic acid. The urine was acid, its specific gravity 1020. He was still troubled with flatulency, but not nearly so much, and he made the remark that when he was so disturbed his head felt free and he was able to work better.

We see, then, in these cases the symptoms of a malady in which digestive disorder occurs, and in which the disturbed nutrition manifests itself in the urine chiefly by the high specific gravity, the urates, and the presence of albumin and casts that are commonly thought to indicate Bright's disease. We frequently also have some body waste, indisposition to physical and mental exertion, fatigue easily induced, an intermittent pulse, cold extremities; and, from the side of the nervous system, the gloom, the despondency, the irritability of temper met with in lithæmics. Headache, too, and vertigo, may be encountered, though they are far from constant.

I shall now group a set of cases alongside of those just described, in

which it is not so much uric acid and urates that we find, as oxalates. The symptoms are in the main the same. But we often have more intestinal indigestion, with very marked flatulency, and there is apt to be even a greater amount of nervous depression. We have, in truth, all the well-known symptoms of oxaluria that betray themselves not only in the digestion, but in the nervous system. Otherwise we find the same high specific gravity of the urine, with the deposit of oxalates in place of urates, although occasionally they are intermixed, and we obtain the same results from sustained treatment, though more slowly. As I have given some illustrations of uric acid disorder leading to kidney complaint simulating Bright's disease, I shall add a few cases as illustrations of the oxaluria that leads to kindred affection. Case III. is a striking instance in a scholarly gentleman from Boston, and valuable because many of the analyses were made with great minuteness by the distinguished professor of medical chemistry at Harvard.

CASE III.—Mr. W., thirty-five years of age, has not been in good health since a college student in 1883. He has had frequent attacks of nausea and dizziness, and, at times, staggering gait; the latter symptom, however, did not appear markedly until June, 1888. He also complained of numbness in the fingers on the right side, and of headache. His eyes were closely examined, but no sufficient cause was found for the attacks, nor for the headaches. He had occasionally distinct seizures of vertigo, and a pain at the base of the brain. The digestive symptoms were very marked, with loss of flesh, flatulency, and, at times, great mental depression. The urine analyzed in 1889 by Professor Wood, of Harvard, showed a great excess of uric acid and of urea, also oxalates and small quantities of albumin, but no sugar.

The urinary condition was much improved by living strictly on milk and Vals water. He took on an average three quarts of milk daily, and for a time the albumin disappeared. Indeed, a report in July, 1889, speaks of its absence as well as of the absence of casts, and only of its increased acidity and of the large proportion of urates. But the absence of albumin in the urine, even at this period, was not constant, for five reports of urinary analysis from the Harvard laboratory, made between March 12, 1889, and October 5, 1889, record albumin. They show acid reaction, increased urea and uric acid, albumin very slight, sugar and bile pigment absent, specific gravity 1027 to 1015 (1015 last examination), chlorides normal, earthy phosphates variable, alkaline phosphates normal or increased; considerable sediment exhibiting at different times excess of mucus, spermatozoa, calcic oxalate crystals, microscopic concretions, acid urate of sodium crystals, urethral epithelium, cells from prostatic region, an occasional blood globule, and renal casts with renal cells adherent, leucocytes, small round fatty cells; in night urine in some specimens casts from the straight tubules with renal cells adherent.

Further symptoms of the case noted were a feeling of constant chilliness, attacks of vomiting lasting sometimes ten days, occasional but not frequent headache, and good knee-jerks. The first sound of the heart was weak, but there was no organic disease. The bowels as a rule were

constipated. Under strict diet, laxatives, and exercise in the open air, his whole condition improved very much.

Early in 1891 the symptoms became again more severe, the indigestion was once more marked, and the attacks of vertigo and the periodic attacks of vomiting returned, especially if his uncertain appetite had tempted him to eat freely for some days. There was extreme sensitiveness to cold water, and a feeling of hunger causing faintness. Insomnia and a sensation of cold, particularly at night, were very distressing. A urinary examination in February, 1891, records the urine as slightly acid, the specific gravity 1025, no sugar, small amounts of albumin, normal phosphates, normal urates, many large and small crystals of oxalate of calcium, and several epithelial and granular casts with some hyaline casts. He was directed to drink Poland and Saratoga Vichy freely, to take as a laxative Carlsbad salts, and to avoid sugars in his diet, and for a time also meats. He took chloride of ammonium, ten grains, three times a day.

Gradually, but particularly after a strict diet, largely of vegetables and milk—to meat he himself had taken a distaste—living in the open air, and keeping up a course of laxatives, his digestive symptoms greatly improved, and all the oxalates disappeared from the urine, and with them the albumin, so that, while he remained a nervous man and often hypochondriacal, he regained his health, certainly as regards the kidney affection. For over a year there have been no tube-casts and no trace of albumin. The specific gravity in an examination of the urine, made in January, 1892, was recorded as 1015, the chlorides were normal, phosphates normal, urates normal; some epithelium from the kidneys and bladder, and amorphous urates were found, but no albumin and no sugar, no casts or blood corpuscles.

Having seen instances like this and bearing them in mind, I have been able of late years to diagnosticate them readily. I have twice within the last year, in cases that happened to be brought to me by the same physician, Dr. MacCuen Smith, recognized this particular form of albuminuria and told the patients that they would recover, as has fortunately proved to be a correct opinion. It may not be without interest to describe these cases, as they are very illustrative:

CASE IV.—M. A. H., forty-two years of age, had influenza in 1889, and has not been in good health since. He has been losing flesh, and has been much troubled with giddy spells. When first examined in November, 1891, the tongue was found to be slightly coated, the breath heavy; the bowels were regular. He had a compressible pulse, a short feeble first sound, no headache, felt very listless and languid, was easily fatigued, and subject to attacks of great mental depression. A dry cough existed. The urine was noted to be of specific gravity 1030, acid, to contain small quantities of albumin, but no bile or sugar. In the sediment granular casts were detected, vesical epithelium and granular débris and oxalates, but no oil, no blood, and no pus. He was placed on Rochelle salts as a morning laxative, directed to take Saratoga Vichy, to abstain from sweets, to use only moderate amounts of meat, and to live on green vegetables, fish, and oysters. He also took from time to time courses of two-drachm doses of Basham's mixture. Ex-

ercise was urged upon him. He began to feel so much better by living more in the open air that he gave up his business, and now he is a completely well man. The urine has become normal, has no trace of albumin or oxalates; he is in good spirits and considers himself in excellent health.

CASE V.—The case of B. T. M., seen in May, 1891, presented similar features. The symptoms of indigestion were very marked; the least exertion, mental or physical, produced great exhaustion, and he, too, had periods of great mental depression. The urine was of high specific gravity, and contained oxalates and albumin. Under treatment similar to that in the preceding case, both oxalates and the albumin disappeared. The urine, frequently examined for eleven months, showed neither oxalates nor albumin. In July of 1892, after considerable worry for ten days, both calcium oxalates and a trace of albumin reappeared; but a more active return to the treatment, which had been almost suspended, caused these to disappear, and Mr. M. expresses himself now as feeling better than he has done for twenty years.

From the general tenor of the cases the form of albuminuria with its particular features will have become apparent. Nevertheless, it will conduce to accuracy if the most striking of these be fully examined. First, of the dyspeptic symptoms. These are rarely absent, though sometimes they are very slight. The signs of intestinal indigestion with flatulency and stools of changed color are more common than the evidences of gastric disorder. Lack of appetite or capricious appetite is, however, not unusually complained of, as well as a feeling of fulness after taking food. The circulation is prone to be irregular, sometimes rapid, sometimes slow. The pulse is often weak and faltering, or intermittent. Rigidity of arteries, or even increased tension, which is said to belong to the uric acid diathesis as well as to the contracted kidney, I have very rarely noted. The hypertrophies and other cardiac lesions of Bright's disease are conspicuously absent. The same may be said of dropsy and of the eye lesions. Of neither of these have I observed a single instance. A symptom worthy of note is the slight rise of temperature, particularly in the afternoon; and this teaches us to think of what the kidneys are excreting when we try to explain those slight but long-continued elevations of temperature, seemingly causeless, that we sometimes meet with. The prominence of the nervous symptoms is always very evident. Listlessness, fatigue on the least bodily or mental exertion, forgetfulness, headache, melancholy, sleeplessness, giddiness, may be severally, or may be all, encountered.

The characters of the urine are very significant. There is first the high specific gravity in a urine that is about the normal amount or a little scantier than normal. The specific gravity generally ranges between 1022 and 1028, but I have known it persistent at 1036. The urine, on standing, often deposits urates, sometimes even uric acid, very often mucus. In the deposit, in place of urates, or alternating with

them, we may find with the microscope very many of the crystals of oxalate of calcium. The uric acid does not necessarily manifest itself by the deposits of urates. It is best to determine it chemically. This is done most readily by Haycraft's process. It is not always in excess in cases which have all the other characteristics of the group under discussion; but these are generally the oxalurics.

The total solids are increased. The salts in the urine other than the urates are in normal proportion, or vary but little; at times the chlorides are increased, and not diminished, as they are persistently in contracting kidney—a point to which Dr. Wolff, who made for me many of the analyses on which these remarks are founded, called my attention. The phosphates are normal or increased; urea is not deficient; it is of normal amount or increased. The relation of the urea to the uric acid is various. If we take the standard which Haig has established for uric acid, as 1 of the acid to 33 of urea, this proportion may be found to be unaltered, or the uric acid even relatively increased. In the cases with oxalates, the excretion of urea is usually much augmented.

The amount of albumin is generally small, but it varies much with the time of day. I found it mostly in the morning urine, or in the urine after breakfast; and with the ordinary tests it is at times absent, especially in the evening urine. But here, as in other cases of so-called intermittent albuminuria, there is this fallacy: The albumin is not really absent, but only greatly diminished; for it may often still be detected by the finer tests, such as by slightly acidulating the urine with acetic acid and then using picric acid, or by Tanret's test, or by the metaphosphoric acid test. It is not unusual for the albumin to be accidentally discovered, either by examination for life insurance (Case VII.), or by chemists testing their own urine for comparison. I have known such instances; in one, the urine was tested as a control experiment in the use of metaphosphoric acid. There has now been no albumin present for over a year, though there are still oxalates.

Casts are scanty or altogether absent. In character they are hyaline, or epithelial, rarely markedly granular, never fatty. In a few instances (as in Cases III. and VII.) fatty cells have been reported as occasionally existing. Casts and albumin mostly go together. Yet I watched a case for ten years in which for a long period hyaline and epithelial casts were very often found in the urine of a gentleman suffering much from oxaluria, without any of the tests by heat or by nitric acid finding a trace of albumin. This case came under my observation before I had learned to employ any of the finer tests for albumin. Complete recovery took place, and ultimately death occurred from an affection of the liver.

When now we come to the question of diagnosis, we find the main difficulty is undoubtedly that there are cases of contracted kidney with

most obscure beginnings, cases in which the amount of albumin is extremely small and at first intermittent, and so often absent that, as in one instance that was finally brought to the post-mortem table and found to have contracted kidneys, albumin was only noticed once in eight examinations.¹ But even in such cases we have the low specific gravity of the urine of the contracting kidney to guide us, and we do not observe the crippled organ passing off abundantly urea, urates, or oxalates; indeed, the urea is often much diminished. In advanced cases there is no difficulty in the differentiation. The retinal changes, the heart symptoms, with the low specific gravity of the urine in contracted kidney, are strikingly different. On this I cannot dwell too much. I have yet to see the first instance of the kind of albuminuria to which I am calling attention, in which the specific gravity was persistently low. To high arterial tension we must not attach too much importance as a means of distinction; for it also occurs from uric acid in the blood.

Another form of albuminuria that it may be difficult to distinguish from this albuminuria of mal-assimilation, is the dietetic albuminuria. Now, in point of fact, a number of the reported instances of the latter are really not instances of dietetic albuminuria at all, but belong to the group under discussion, although they are not so recognized. In true dietetic albuminuria the albumin is only found in the urine when certain articles of food are taken, generally in immoderate amounts, such as cheese, eggs, or pastry. This albuminuria, too, has its special periods; it is particularly common after breakfast or a mid-day meal. It only occurs after the ingestion of food, and then very quickly, and, as the cases of Grainger Stewart² prove, it is worse after mental excitement and exercise, and is unattended by tube-casts. Very significant is it that the albumin is never found in the urine before breakfast, and that the albuminuria lacks the signs of disorder of the nervous system; significant, too, is the high specific gravity of the urine with the attending persistency of urates or oxalates.

The albuminuria of severe exercise, with which we have become familiar through the observations of Grainger Stewart³ on football-players and on soldiers, and through the critical analysis of Senator,⁴ is discriminated from the albuminuria of perverted nutrition we are endeavoring to elucidate by its occurring only after strenuous exertion, and by the absence of all other symptoms as regards the digestive state and the nervous system. Undoubtedly, violent exercise will also in the albuminuria under discussion increase the amount of albumin tem-

¹ Brennan: New York Medical Journal, July 4, 1891.

² Lectures on Albuminuria, 1888.

³ Ibid.

⁴ Die Albuminurie, 1890.

porarily. But it does not do so in a distinctive or peculiarly striking manner; and, the strain over, the abnormal ingredient shows itself in its usual way.

One more point let me mention in the diagnosis of the albuminuria of uric acid and of oxaluria. We must be careful, when we obtain reactions showing but traces of albumin, to be sure that it is really albumin and not mucin we are encountering; for the amount of mucus in the heavily loaded urine is often very great. With reference to the kind of albumin that is discharged, it is, I believe, serum albumin. But whether it may not be mixed with globulin, or this preponderate, is a matter for future chemical research, as well as in how far peptones also occur and become a source of error.

The form of albuminuria under consideration may be met with at any age. It is rare among children or old persons. It is common in growing boys. It affects the sexes in an extraordinary disproportion. Bright's disease, as is well known, is much more usual in men than in women. But in the albuminuria and the Bright's disease of uric acid or of oxaluria the difference is still more striking. In the many instances I have met with there is but one woman, now a young married woman, who had had the disorder for some years and was cured by going to Carlsbad. Even her case was not entirely free from uncertainty, as there had been a severe attack of scarlet fever a few years before the albuminuria was discovered. Still, irrespective of this case, I cannot doubt that the disease may occur in women; for some of the reported cases of intermittent albuminuria in women, as, for instance, the cases spoken of by Dubreuilh,¹ admit best of this interpretation.

I have just mentioned the frequent occurrence of the disorder in boys. Indeed, since I have been studying the subject, I have become convinced that the albuminuria of adolescence, the form so common at or for some years after the age of puberty, is in the majority of instances the albuminuria of uric acid and of oxaluria. Long before I understood this disease I was struck with the fact that the albuminuria of adolescence showed marked debility, digestive disorder, albumin in varying amounts, mostly small, urine of high specific gravity abounding in urates or in oxalates, or in both. The intermittent character of the albuminuria and the sparse tube-casts are also very suggestive. Let me add that I believe most of the so-called intermittent albuminurias, or functional or cyclic albuminurias—for such are the many names given to the same disorder in which albumin unconnected with a real disease of the kidney appears at certain periods in the urine—whether they occur in adults or in young persons, to be also instances of this kind of albuminuria, and that it is the tissue-waste, with its uric acid or oxalates, which causes in

¹ Revue de Médecine, 1887, vii.

its excretion temporary disturbance of the kidneys. Is not also the so-called physiological albuminuria of similar origin? And does not the irritation of the kidney from the excretion of the tissue-waste have as much to do even with the albuminuria after forced exercise, seen in the contests of pedestrians or in soldiers, as the altered blood-pressure and active congestion the exercise produces? It may be, then, that, studied in the light of attending tissue-waste and disordered nutrition, more or less permanent, all these forms of albuminuria will receive a new meaning.

It is not my purpose to examine here into these different types of functional albuminuria further than is necessary to connect them with the object of this paper. But there is one point that experience has taught me which it may not be without value to mention. The cases of intermittent albuminuria in adolescents have been supposed to be due to a weak circulation which attends the languor and listlessness in some of the boys it affects. I cannot think that any disordered flow of blood in the renal vessels from weakness is the true cause. Indeed, one of the most typical illustrations of the malady I have known was in a college student with hypertrophy of the heart and slight mitral disease, with whose case I have been familiar since his childhood. The circulation has been always over-active.

CASE VI.—B. W., aged nineteen, a student at Yale, has had, for years, hypertrophy of the heart with mitral regurgitation, which followed rheumatic fever in 1883. Examinations of the urine had shown nothing abnormal to exist until January, 1892, when he saw me on account of frequent nose-bleeding. His tongue was somewhat coated; he did not complain of headache; the heart's action was about the same as usual, though the pulse was not quite so strong; he expressed himself as not feeling vigorous. The heart's impulse was still forcible, and indicative of the hypertrophied condition. I found albumin in his urine, and a subsequent examination of the evening and morning urine, made by Dr. Wolff, gave these results:

	Morning.	Night.
Appearance	Clear	Clear
Color	Yellow	Yellow
Reaction	Acid	Acid
Specific gravity	1030	1032
Total solids	6 per cent.	6.3 per cent.
Urea	2.8 per cent.	2.6 per cent.
Chlorides	1.7 per cent.	1.6 per cent.
Albumin	Faint traces.	Traces.
Sugar	None	None
Sediment by microscopical examination }	Calcium oxalate copious.	Calcium oxalate copious.

In a number of specimens examined no casts could be detected. The enormous amount of crystals of oxalate of calcium pointed to the incomplete suboxidation that was going on. The urea, it is seen, was below the proportion of total solids, and below the proportion of the chlorides.

The patient was placed upon muriatic acid, laxatives, and diuretic waters, at first Buffalo Lithia, and subsequently Poland water. He was restricted in sugars and meats, and was allowed to take moderate exercise. On the 15th of January no albumin could be detected in the morning urine. On the 19th of February the specific gravity of the evening urine was 1038, and there were heavy deposits of urates and small quantities of albumin. In the morning urine of February 20th, the specific gravity was 1030, the urine was acid, and no traces of albumin could be found by boiling with acetic acid, or by the nitric acid contact test, or by picric acid dropped into urine acidulated with acetic acid and boiled. From this time on, a number of examinations of the urine showed no albumin. The treatment was, in the main, kept up, occasional short courses of Basham's mixture substituting the muriatic acid. The diet was adhered to, and he was allowed moderate amounts of milk. A gradual improvement took place; the specific gravity decreased, though in several specimens it was still 1026; and since March 23d, while oxalates and urates have been found at times, there has been no albumin, and he has felt well. The last examination of September 26th proved him to be in good health, and he shortly after resumed his work at college.

The prognosis is favorable, though the cases may be of long duration, lasting several years, with occasional reappearance of the albumin in the urine. When recovery takes place, which I think is almost invariable under proper treatment, and albumin and casts have long ceased, it is not unusual for small cells still to be found with the microscope in the urinary sediment, very likely incompletely formed cells from the tubules of the kidney. Yet I believe that occasionally, from very long continuance of the disorder, fibroid changes may take place and interstitial nephritis result. Notwithstanding some doubts that suggest themselves, owing to the history, I think this to be a case in point.

CASE VII.—Mr. C. L., fifty-three years of age, a manufacturer, became aware of having a renal disease on applying to a life insurance company in June, 1882. His application was refused on account of albuminuria. Except that he was tired from strenuous attention to business, and was a dyspeptic, he regarded himself as in perfect health. The discovery of albumin in his urine led him to put himself under treatment, and to retire from business. He was actuated partly in this by the fact that he had lost two brothers by Bright's disease. In March, 1883, as the records of a very accomplished physician in Richmond, who examined him, show, he was suffering a great deal with lassitude and general depression, and complained of pain in the back and head, indistinctness of vision, and was rheumatic. The urine at that time had a specific gravity of 1020, the amount voided in the twenty-four hours being forty ounces, and contained 6 per cent. of albumin by measure; no sugar, but granular casts, torulæ, and fat-cells. It was acid, and showed 320 grains of phosphates in the forty ounces; the urates were not determined. By June 11, 1883, the patient being under treatment, the albumin as well as torulæ had entirely disappeared; so had the casts, and the phosphates were normal; the specific gravity was 1014.

The urine, in March, 1886, examined by the same physician, is recorded as having one-seventh per cent. of albumin by measure or bulk, and again granular casts; and to be of specific gravity 1014, and acid. The phosphates were half a grain to the drachm.

Mr. L. subsequently went abroad and consulted a very eminent London physician, who looked upon his case as one of albuminuria largely due to nervous injury and indigestion, and to renal gravel. His analysis shows the urine to have been of specific gravity 1016, acid, normal in urohematin, in oxalic acid, in hippuric acid, in hydrochloric acid, in sulphuric acid, but with an excess of uric acid and of phosphoric acid; there were no bile acids. There was a little albumin. There was none in the urine at 8 A.M.; some was found at 11 A.M.; at 10 P.M. it was again absent. Under the microscope torulæ were detected, but no casts. The urine, examined several times after this record, showed no albumin or casts, but always torulæ. The patient's health had improved very much under diet and treatment for his indigestion.

Mr. L. consulted me September 27th, of this year, on account of severe headache coming in spells in the morning, and great annoyance from flatulency. The bowels were slightly costive, the tongue lightly coated; he complained of pain over the left kidney. The pulse was 80, of rather high tension, but the second sound was not accentuated, nor was there cardiac hypertrophy. A urinary examination showed the urine to be of specific gravity 1013, to contain a trace of albumin, a deficiency of urea, no sugar and no casts, though a good many epithelial cells were found. He was placed on a diet chiefly of milk, green vegetables, and fruit. Phosphate of sodium was given to him in the morning, and, subsequently, ten drops of dilute muriatic acid three times a day. His digestion improved decidedly under this treatment, and the headaches lessened greatly, yet an examination of the urine on October 20th still showed albumin, quite well marked with the picric acid test, and the nitric acid ring test. A subsequent and careful analysis by Dr. Wolff gave in the urine of a total quantity of 64 ounces in a day, the following:

Total quantity as given, 64 ounces (normal 48 ounces); appearance, slightly cloudy; color, yellow; odor, normal; reaction, very acid; specific gravity, 1015; total solids, 3 per cent. = 960 grains in twenty-four hours (by Vogel, normal 930 grains); urea, 1.7 per cent. = 518 grains in twenty-four hours (by Vogel, normal 542 grains); uric acid by Haycraft, 0.141 per cent., in twenty-four hours 43.2 grains (normal, 11.7 grains); chlorides (as NaCl) = 0.68 per cent., in twenty-four hours 206.4 grains (normal, 255 grains); albumin (computed dry) in twenty-four hours, 7.6 grains; sugar, none; sediment consisted of epithelial cells (bladder), also a few leukocytes and red corpuscles.

This proves that there is little, if any, diminution of urea, but a marked diminution of the chlorides. The uric acid, as determined by Haycraft's method, is about three times the normal amount, and the ratio of the urea is as 12 to 1, which is a great increase, if we accept the estimate of Haig as to 33 to 1 being the norm. The sediment consists of epithelial cells from the bladder, also of a few leukocytes and red corpuscles, but no casts are detected.

What is the pathological state that gives rise to the albuminuria of uric acid and of oxaluria? I think essentially a congestion of the

kidney, with, should the hyperæmia persist, slight local inflammatory changes in the vascular cortex from the irritating effects of excreting increased amounts of ill-formed or broken-down tissue in the shape of urea, urates, or these imperfectly oxidized, as oxalates. In other words, the primary fault is not in the kidneys, though the kidneys suffer because they have to throw off the irritating waste products. Anything that lowers vitality and disturbs the nervous system may increase the faulty assimilation, and, with it, the irritation and congestion which produce the albuminuria. The question whether this kind of albuminuria ever passes into true organic affection of the kidney has been already considered. I believe this to be possible, but of extremely rare occurrence, and, when it happens, to be brought about by the constant irritation leading to slow fibroid changes, and gradually developing interstitial nephritis. It is held by some that all, certainly most, cases of Bright's disease originate in uric acid excess acting locally. This view seems to me too sweeping, for, even for the production of the gouty contracted kidney in which we have uric acid playing so important a part, we have other elements to take into account—the general changes that occur in the body, the state of the abdominal ganglia, and the condition of the arteries, which, in the various relations of Bright's disease, have been so admirably described by Gull and Sutton and by Arthur Meigs.

In the treatment of the albuminuria of uric acid and of oxaluria we must bear in mind that we are dealing with a special disease, one in which mal-assimilation is the main element, and the kidney affection only a conspicuous expression. The treatment must not be, therefore, purely that of Bright's disease, as we commonly meet with it, but largely that of the underlying state, a state chiefly one we are familiar with as lithæmia, or as oxaluria. The lines of treatment are, it is true, in the main parallel. Thus it is just as essential in this form of albuminuria as in the ordinary forms of Bright's disease to lessen the work of the kidneys by calling the various emunctories into play. Nay, it is more essential, for the kidneys have not only usual work, but largely more than their share of work thrown on them; and it is this extra work that leads to their damage. Their labor can be much lessened, and the blood condition and the character of the excretions altered, by close attention to diet—which is, in the main, also that of Bright's disease, though it is stricter as regards the ordinary carbohydrates, and, on the other hand, does not insist so much on milk. Vegetables, especially the green vegetables, and fruits are freely allowed; tea, coffee, and cocoa are permitted, if sweetened but slightly; so are limited amounts of oatmeal, of buckwheat and corn cakes, of rice, of bread and butter; and so are oysters and fish. The white meat of poultry and of game may be moderately taken, but the meats containing much nitrogen,

such as mutton and beef, ought, as a rule, to be avoided. I find, however, where considerable exercise is indulged in, particularly by growing boys, that meats may be eaten in restricted amounts without disadvantage. Milk I do not find especially useful, and direct only a pint or two daily. It is, indeed, quite unnecessary to confine the patients to a milk diet, as is so often done, and done with advantage, in the usual nephritic kinds of Bright's disease. In fact, I have known an instance where a permanent cure was effected on a vegetable diet, in which an exclusive milk diet had left the urine still albuminous. Eggs need not be forbidden, if they be not taken constantly, and if the yellow rather than the white be eaten. As regards sugars, I am always strict, for I have too often noticed how they aggravate the symptoms in lithæmics. Beets, for the same reason, are forbidden. Among vegetables, too, I never allow the rhubarb plant, for I have observed, after its use, oxalates, and with them albumin reappear. Salt may be always freely taken.

It is, as in all forms of albuminuria, important to keep the kidneys flushed. The free use of pure water, plain or aerated as faucy dictates, and of the mild diuretic waters, such as Poland water, Saratoga Vichy water, or Vichy water, is always of service. Drinking hot water at bedtime acts in some persons very beneficially as a diuretic, and gives a copious flow of urine in the morning—doubly serviceable then, for Roberts and other observers have shown that uric acid is largely excreted during the morning hours. Drinking fluids before or soon after breakfast is valuable for the same reason. Alcoholic drinks ought, as a rule, to be avoided, or, if used, to be restricted to light wines, not acid. Beer is forbidden.

The use of baths, not too cold, followed by systematic skin friction, is clearly indicated; and of the value of exercise in the open air I have seen many striking examples. As long as it is not excessive and too long continued, it does good service. It helps to oxidize the food-stuffs as well as the waste products, and produces free action of the skin. Far from increasing the albumin, as violent exertion will, it diminishes it. I learned this lesson from experience. I examined the urine of a young man that was albuminous in the morning, and, after his taking a horseback ride in the forenoon, the albumin had disappeared. The good results seen from life in the open air led to the inquiry whether mountain air was beneficial, even in high altitudes. I have found it so, unlike what we so often notice in the ordinary varieties of Bright's disease. The urine improves, and the albumin may, for the time, cease to be voided. Sea air does the general health good, but sea-bathing I have known to increase the albuminuria, as has also been observed for other forms of the disease. Cold douches to the spine I have not systematically tried. Grainger Stewart speaks of their causing the albumin

to disappear in dietetic albuminuria. It is, I think, important that the patient should not make much exertion in the early part of the day. In one of Clement Dukes' very instructive papers on "The Albuminuria of Adolescents"¹—a form which I have already cited as belonging, I think, in the main, to the group I am here describing—he mentions as a significant sign that boys affected with it fainted when obliged to stand during morning prayers in chapel. Young people who have the complaint ought not to be pushed in their studies. It is in them an expression of a disturbed development of the growing organism; an expression of weakness of nerve force, and of poor assimilation during growth.

Among medicines, laxatives are very important—phosphate of sodium, cream of tartar, Rochelle salt. An occasional blue pill, or a grain or two of calomel preceding the saline, is also to be recommended. So is a course of muriate of ammonia, or of iron, from time to time—iron, in the shape preferably of the tartrate of iron and potassium, or of Basham's mixture. In the cases with oxalates, nitro-muriatic acid remains a standard remedy, and Haig,² in his recent very interesting work, strongly urges acid as clearing the blood of uric acid. We must not in any case overlook the heart. The heavy work thrown on the kidneys, the general ill-nutrition which comes from the poorly oxidized elements circulating in the blood, and the lowered nerve force, disturb the heart, and the irregularity it exhibits may have to be met by digitalis or strychnine. The inhalation of oxygen has suggested itself, but I have not as yet used it sufficiently to be sure of its distinct therapeutic value.

The treatment has been described in this paper at some length, because we have it in our power to make this treatment effective, and, by applying it to a form of albuminuria that can be clearly recognized, to rescue cases which otherwise might really swell the list of Bright's disease, with the dreaded name of which they are commonly labelled.

TENOTOMY BY THE OLD METHOD.

BY FREDERICK TREVES, F.R.C.S.,

SURGEON TO AND LECTURER ON ANATOMY AT THE LONDON HOSPITAL; EXAMINER
IN SURGERY AT THE UNIVERSITY OF CAMBRIDGE.

JUDGED by the simplest surgical principles, it would appear that the division of a shortened tendon or of a contracted band of fascia could best be accomplished by exposing it through an incision in the skin, by

¹ London Lancet, December, 1891.

² Uric Acid as a Factor in the Causation of Disease, 1892.

isolating it, and then by cutting it with the least possible injury to the adjacent parts. Such a method was carried out—with some uncouthness, probably—in the early days of tenotomy.

The first operation of tendon division is ascribed to Roonhuysen, of Amsterdam,¹ who severed the sterno-mastoid tendon in 1670. A flap of skin was raised, and the contracted band was then cut “from without inward,” as the phraseology goes. One hundred years went by, and surgeons were still found to be following the same method. Ten Haaf² operated after this fashion upon the sterno-mastoid tendon toward the close of the eighteenth century, and Sharp³ is found to be departing but little from the ancient plan when, after exposing the tendon, he passed the knife beneath it and divided it by cutting toward the surface.

The records of the time, however, show that there was some surgical uneasiness about this apparently simple operation. It was seldom performed by the bold, and it was feebly modified by the timid. A certain surgeon, one Minnius,⁴ destroyed the skin over the tendon with caustic, and then divided it with scissors. Surgical procedures in this direction do not appear to have descended lower than this. Other operators, with what appears to have been a reckless querulousness, divided the skin and the tendon in one feverish gash, and then apparently waited to know the worst.

The reason of all this was that an open wound was a terror to the conscientious surgeon. Healing by first intention was rare; suppuration was the rule. The dressings applied were to the bacteria of the time what a tropical climate is to vegetation. The fussy attention which gave the wound no prospect of being left alone, and which encouraged the pouring into it of oil and wine, took away the few remaining prospects of success. Surgeons have never been famous for the publication of their failures; but one can imagine the suppuration that took place in the tendon sheaths, the abscesses that ran riot in the connective tissue, the joints that were disorganized, and the limbs that were lost in those picturesque times, when the surgeon wore knee-breeches and a furred cloak, and when aseptic surgery was yet without form and void.

Such was tenotomy by the open method. In course of time it was demonstrated that tendons could be divided without making a large surface incision, and that by means of a small skin puncture and a subcutaneous section of the contracted band, the evils attending the older plan were for the most part avoided.

Delpech⁵ laid down the principles of subcutaneous tenotomy as it is

¹ Historische Heileuren. Nürnberg, 1674.

² Abhandlungen aus der Naturgeschichte. Leipzig, 1775, vol. i. p. 262.

³ Treatise on the Operations of Surgery. London, 1740.

⁴ Tulpii, Observationes Medic.

⁵ Chirurgie Clinique de Montpellier, 1823, t. i. p. 184.

practised at the present day, but it is remarkable that he himself did not observe the precautions of which he preached, for in dividing the Achilles tendon he made a cut on each side of the tendon one inch in length.

Ashley Cooper¹ employed the subcutaneous method for dealing with contracted fasciæ in the hand, and within a few years, influenced by the practice of Stomeyer and others, subcutaneous tenotomy came to be generally employed.

Now it cannot be ignored that that necessity which led to the invention of the subcutaneous operation no longer exists, and that the circumstances which made the older procedure rash and dangerous have entirely passed away.

It remains to consider whether this excessive caution in dividing a shortened tendon is still admirable, even although it has ceased to be necessary, and whether the operation has special merits which are independent of the conditions which brought it into being.

Should the time ever come when all surgical secrets are unfolded, I think it would be found that the tenotome has many sins to answer for. There would be recorded against it many disastrous cuts in the dark, many cases in which the wrong tendon had been severed and the right one saved, not a few instances of the division of unseen veins, of the outpouring of blood into tendon sheaths, of the pricking of arteries and the cutting of nerves.

It is a good rule in surgery that the surgeon's blade should reach no farther than his eye can follow it, that every cut should be made with the utmost precision, and that the scalpel should be free from all speculative movements.

In some cases of tenotomy—as, for example, in dealing with the Achilles tendon—the blade, although hidden from view, can be directed with the greatest exactness; but in other instances the thrust of the knife is a thrust made at a venture, and the procedure lacks that definiteness which should never be wanting in any surgical operation.

In judging between the subcutaneous and the open methods in tenotomy, and in appraising their comparative value, a decision can be made to depend upon the interpretation of two surgical axioms.

The first of these is to the effect that the operation incision should never be larger than the efficient performance of the operation requires, and the second insists that the division, and, if need be, the subsequent separation of the integuments, should be sufficiently free to enable the parts concerned to be well exposed, and to be dealt with with exactness. Here, then, are two extremes. On the one hand, there may be surgeons who will boast that they can ligature the common carotid, or extract

¹ On Dislocations and Fractures; sixth edition, 1829, p. 476.

the ovaries, through an inch incision. Such feats are possible, but they belong rather to legerdemain than to operative surgery; they are curious, but at the same time are both foolish and foolhardy. On the other hand, the worshipper of the free incision will maintain that the size of the skin-wound is of no moment at the present day, and that a free and ready exposure of the operation district is worth any sacrifice. A surgeon so minded may ligature the carotid by a process comparable to that by which the vessel is exposed in the dissecting room, and his abdominal incision may be founded upon the liberal lines observed in the making of post-mortem examinations.

So far as the present subject is concerned the true course lies between these two extremes.

If a tendon can be easily and certainly divided through a small skin puncture, then there can be no reason for employing a larger incision.

In dividing the tendo Achillis I still employ the subcutaneous method, not because a subcutaneous incision is safer, but because the tendon can be quite as well severed through a small incision as through a large.

On the other hand, if the position of the tendon or band be such that its subcutaneous division is attended with the very least uncertainty, then I freely expose it by turning back a suitable flap of skin. By such a procedure the tendon is brought well into view, its sheath can be precisely opened, and its substance precisely divided.

In dealing with a severe case of wry-neck, it appears to me that the subcutaneous method is entirely out of place, and I have observed the plan of exposing the part through a flap, and of then cutting such contracted tissues as need division (and they are not represented solely by the sterno-mastoid tendon) without the least element of speculation or uncertainty.

For some years past I have returned to the older method of tenotomy in the majority of the cases requiring that operation in its widest sense, and have employed the improved or subcutaneous incision in but a comparatively few cases.

The following case will perhaps serve to illustrate some of the remarks just made, and to afford an example of the value of the open method:

A young woman, aged twenty-one years, was admitted into my wards at the London Hospital, on March 10, 1892, with a contraction of the right knee. She was delicate and a member of a tubercular family. The knee had been the seat of tubercular disease which commenced four years ago. The joint was at first swollen, and splints were applied and kept in position for a period of seven months. When these were removed the articulation remained stiff and the patient was unable to use the limb. Fifteen months from the commencement of the disease an abscess appeared in the upper and outer part of the popliteal space. It continued to discharge for a period of six months. The limb became gradually bent. Two years ago a tubercular ulcer formed over

the right malleolus. This gradually extended, and on admission had a diameter of two inches. The patient had not used the limb for about three years. On admission the knee was found to be free from active disease. It was tender and was fixed in the posture of semi-flexion. A sufficient degree of movement was apparent to make it evident that the ankylosis was not osseous. This movement was very insignificant. The young woman was unable to put the foot to the ground. The ulcer was scraped and grafted, and healed readily. The limb was suspended by two bands, one around the ankle and one above the knee, and a slight weight was applied over the joint. No improvement in position followed. A posterior splint was then applied and further attempts made to straighten the limb. An ulcer formed behind the ankle, due to the pressure of the splint, but the deformity remained unchanged. These attempts to correct the false position by mechanical means were maintained from March 10th until May 20th. On May 27th I carried out tenotomy by the open method. The skin of the ham presented scars of the old abscess, and the precise anatomy of the contracted tissues beneath it was very obscure. A rectangular flap of skin which took in the whole of the covering of the popliteal space was fashioned and turned up. The district beneath was well exposed and the various contracted tissues were severed as they were encountered. The semi-membranosus and semi-tendinosus tendons were cut, as was also the ilio-tibial band of the fascia lata.

A considerable quantity of cicatricial tissue occupied the popliteal space, and this was cautiously divided to some depth. It appeared to offer the greatest resistance to the straightening of the limb. The biceps tendon was not severed. The knee was brought to the position of full extension without the employment of any force.

The flap was secured in place by sutures and covered by a dry dressing. An anterior metal splint was applied by means of which the limb was suspended.

The wound healed perfectly by first intention and without rise of temperature. On June 2 a simple back splint took the place of the anterior splint, and a little later the limb was put up in plaster and the patient encouraged to once more attempt to walk.

She left the hospital on July 9. She was then able to walk without limping and without a stick or any assistance. The limb was perfectly straight, and a little movement, which was increasing, was observed in the joint.

During the operation it became evident that no series of subcutaneous incisions could have divided all the complex contracted bands, and that such incisions would not have been unattended with risk. By the subcutaneous method the biceps tendon would have been severed without doubt, and after the three great tendons had been divided the limb would possibly have been put straight by force.

The contracted tissues, deep in the ham, would have been roughly torn through by such a measure, and subcutaneous bleeding and recontraction would have very probably resulted. In the operation described no force was employed, and the deformity was corrected by a series of simple incised wounds.

I think it will be allowed that in such a case as this the old method was the safer and surer and the more completely in accord with the first principles of operative surgery.

TUBERCULOUS PERICARDITIS.

BY WILLIAM OSLER, M.D., F.R.C.P. LOND.,

PROFESSOR OF MEDICINE IN THE JOHNS HOPKINS UNIVERSITY AND PHYSICIAN-IN-CHIEF
TO THE JOHNS HOPKINS HOSPITAL.

TUBERCULOSIS follows hard upon rheumatic fever as a cause of pericarditis. The affection is usually overlooked clinically, and possibly in some cases anatomically. In 1000 autopsies, the majority of which were made at the Montreal General Hospital, there were 275 cases with tuberculous lesions, in 7 of which the pericardium was involved. Its relative frequency may be gathered from the following figures, furnished by Dr. Welch's records at the Pathological Laboratory of the Johns Hopkins Hospital. Of instances of pericarditis, 6 were tuberculous. Of late years attention has been called to the frequency of its occurrence, and yet the records in the literature are not very numerous; thus, the *Index-Catalogue* contains only thirty references, and the *Index Medicus* to July, 1892, only twenty-seven. The *Transactions* of the Pathological Society of London include but five cases to date.

The following is a brief summary of the cases which have come under my observation in Montreal, Philadelphia, and Baltimore:

CASE I.—Female, aged forty-three years; sixteen ounces of dark exudate in pericardium; general miliary tuberculosis.

CASE II.—Male, aged five years; caseous masses and fresh villous exudate; miliary tubercles on the peritoneum and in lungs; bronchial and mediastinal glands caseous.

CASE III.—Female, aged thirty-eight years; chronic pulmonary tuberculosis; fresh tuberculous pericarditis.

CASE IV.—Male, aged sixty-four years; acute tuberculous pericarditis; acute tuberculous pleurisy; chronic pulmonary tuberculosis.

CASE V.—Male, aged fifty years; chronic pulmonary tuberculosis; recent tuberculous pericarditis.

CASE VI.—Male, aged forty-five years; chronic pulmonary tuberculosis; chronic tuberculous pericarditis.

CASE VII.—Male, aged twenty-eight years; chronic pulmonary tuberculosis; tuberculosis of pleura; acute tuberculous pericarditis.

CASE VIII.—Mary B., aged thirty-six years; tuberculous pyelitis; fibro-caseous changes at the apices; sixteen ounces of turbid hemorrhagic serum in pericardium; thickening of the layers.

CASE IX.—John G., aged fifty years; tuberculous mediastinal

abscess; tuberculous infiltration of parietal layer of pericardium; acute pericarditis.

CASE X.—Max S., aged forty-five years; primary tuberculosis of bowels; chronic tuberculous pericarditis, the membranes from three to four lines in thickness; bronchial glands caseous.

CASE XI.—Male, aged seventy-two years; death from pneumonia; heart hypertrophied; pericardium adherent, greatly thickened, and tuberculous; calcification of bronchial glands; no other tubercles in body.

CASE XII.—John T., aged sixteen years; tuberculous cerebro-spinal meningitis; tuberculosis of mediastinal glands; old tuberculous pericarditis.

CASE XIII.—Moses B., aged twenty-four years; tuberculosis of mediastinal glands; chronic tuberculous pericarditis; dilatation of heart; a few tubercles in lung.

CASE XIV.—Wm. H. T., aged fifty-two years; dropsy; hypertrophy and dilatation of heart; chronic tuberculous pericarditis; fibroid tubercles in lungs; miliary tubercles in viscera.

CASE XV.—John P., aged thirty-eight years; dropsy and dyspnoea; tuberculous pericarditis with effusion; tuberculous pleurisy; old foci in lungs.

CASE XVI.—Emma B., colored, aged thirty-nine years; dyspnoea, cough, and anasarca; tuberculous pericarditis, with effusion; tuberculosis of mediastinal and bronchial glands; scattered tubercles in lungs, liver, and spleen.

CASE XVII.—John C., aged sixty-five years, admitted with cough, fever, and signs of consolidation at left base. Death on second day after admission. Chronic pulmonary tuberculosis; fresh tuberculous pneumonia; arterio-sclerosis; patch of recent tuberculous pericarditis.

ETIOLOGY.—Tuberculous pericarditis is not limited to any age. The youngest of my cases was a child of five years; the oldest a man of seventy-two years. Parrot, Duckworth, Rolleston and Letulle have reported cases in infants under a year. In Brackmann's Göttingen Thesis, of 65 cases collected from the literature 19 were in children. It does not seem to be at all uncommon in old men, and there are two cases on record in octogenarians. Males seem more prone to the disease than females; there were only four women on my list.

Tuberculous pericarditis is due in a majority of instances to infection of the membrane from caseous mediastinal lymph glands. The disease may be confined to these glands and to the pericardium; thus, in Case XI. of my series, the patient, an old man, aged seventy-two years, died of pneumonia after a short illness. There was no tuberculosis of the lungs or other viscera; the pericardium was thickened, both layers adherent, and presented cheesy masses and gray nodules. The heart was enlarged, weighing seventeen ounces. The mediastinal glands were calcified, particularly the bronchial group. Case IX. is of special interest, showing the mode of extension from the anterior mediastinum to the pericardium. The patient, a man aged fifty years, had pulmonary

tuberculosis, and died of acute tuberculous pleurisy with sero-purulent exudate. Upon the external layer of the pericardium, three and a half inches in extent, was a flattened tuberculous abscess with cheesy and purulent contents. The subjacent pericardium was much thickened, and was itself cheesy, and inflammation had extended through and produced an acute fibrinous inflammation of both layers with very little fluid exudation. Tubercles could not be seen. This association of disease of the mediastinal lymph glands with pericarditis has long been recognized. Zenker laid special stress on it in his paper on the traction diverticula of the œsophagus, caused by diseased lymph glands, and of his 54 cases there were 9 instances of total and 1 of partial synechia of the pericardial layers. Of the 101 instances of disease of the lymph glands of the mediastinum, collected by Beréty, the glands were caseous in the 18 cases in which the pericardium was involved. Kast, who quotes these figures, reports an instance (*Virchow's Archiv*, Bd. xcvi.) of acute tuberculous pericarditis due to perforation of a purulent mediastinal lymph gland into the pericardial sac. In children the affection is in all probability most commonly transmitted in this way from mediastinal and bronchial glands. In Case II., a child aged five years, the bronchial glands were greatly enlarged, projected deeply into the lung tissue, and presented on section a uniform caseous appearance. Both layers of the pericardium were greatly thickened; their adjacent surfaces roughened and irregular; not covered with the usual false exudation, but presenting strands of firm tissue, and flat, slightly elevated caseous masses, which were yellow-white in color, and equally distributed on both layers. There were scattered miliary tubercles in the lung, on the peritoneum, in the kidneys, and in the liver, and these were in all probability entirely secondary to the advanced bronchial and pericardial disease.

A second, less common, mode of extension is from the pleura or from the lung. A very good illustration of this was recently met with in Case XVII., a man aged sixty-five years, who was admitted to ward F of the Johns Hopkins Hospital with acute tuberculous pneumonia, and died on the following day. There was old disease of the lungs, and both acute and chronic tuberculous pleurisy. The left lung was strongly adherent to the pericardium, the cavity of which contained a small amount of clear fluid. The inner surface of the parietal layer was smooth, and presented a number of ecchymoses. At the superior reflection, where it was adherent to the underlying thickened and infiltrated pleura, there was an eruption of fresh gray miliary tubercles.

And, lastly, there are instances in which the pericardium appears to be involved with the pleura and peritoneum in a general tuberculosis of the serous membranes. In some of these cases the extension can be shown to have been directly from the pleura and pericardium into the

peritoneum, while in others it would appear that the extension was from the peritoneum into the serous membranes of the thorax.

MORBID ANATOMY.—The picture is extremely varied. Practically there are two groups of cases: those with firm adhesions between the pericardial layers, usually with great thickening; and those with recent exudation, fibrinous, sero-fibrinous, hemorrhagic, or purulent. The cases with adhesions are the most numerous. Of the 17 cases in my series, 2 cases, Nos. IX. and XVII., may be excluded, as in the first there was only tuberculous infiltration of the parietal layer, and in the other an eruption of fresh miliary tubercles alone. Of the remaining 15 cases, in 6 only was there thickening of the layers without exudation. The statistics, however, of Rousseau (Paris Thesis, 1882) and Lancereaux show that the chronic adhesive form is most common. Of the 35 observations analyzed by the former, in 21 there was adherent pericardium; while in 12 of Lancereaux's 14 cases there were adhesions.

Both layers are, as a rule, uniformly thickened, and in the extreme instances it is impossible to separate them at any point. In other cases the process is more local, and the synechia may be limited to the front of the heart, leaving large portions of the base and of the left auricle free. The reflection of the pericardium at the great vessels and the adjacent mediastinal tissues may be uniformly infiltrated and the vessels surrounded by a solid mass. In Case X. "the layers of the pericardium were adherent and measured six to ten mm. in thickness, and showed groups of tubercles, many of which had fused together in uniform cheesy masses. The tubercles and caseous masses can be readily distinguished in each layer, since between them there is an infiltrated connective tissue which is free from tubercles. At the base of the heart the thickened pericardial layers formed a solid cheesy mass surrounding the aorta."

The membranes may reach a thickness of from three to ten millimetres, the increase being due to the growth in the leaves of tubercles, the development of caseous masses, and to the new growth of connective tissue. Frequently it can be seen that the two enormously thickened layers are united by a clear, infiltrated tissue, which may itself not present any tubercles. In the earlier stages of this process the membranes are little, if at all, thickened, the tubercles are seen just beneath the endothelial layer, and there may or may not be a fresh exudate of yellowish fibrin. In other instances the contiguous surfaces of the thickened layers are covered with flat, yellowish caseous masses, as noted in Case II. Collections of thick cheesy pus are occasionally found between the layers.

The condition of the heart in this chronic adhesive form is most interesting. As is usual in adherent pericardium, particularly when the layers are very thick, there is enlargement of the organ, which may

reach an extreme grade. In Case XIV. the heart with the thickened pericardial membranes weighed thirty-six ounces. At the time of death the cardiac muscle is more or less degenerated, and may show fatty or fibroid changes. The tuberculous process rarely invades the ventricular muscle, though the thin auricle may be much infiltrated, as in Case XV., in which the appendix was converted in great part into cheesy material, only a thin film of muscle substance remaining.

In the cases with effusion there may be—(a) a simple plastic exudate similar to that of ordinary rheumatic pericarditis, with little or no serous effusion, and with scarcely any thickening of the membrane, the eruption of miliary tubercles alone indicating the nature of the process. More commonly there is (b) extensive sero-fibrinous exudate, consisting of flakes of lymph and a turbid serum. When the process lasts for any length of time, the membranes, as in Cases XV. and XVI., may be very greatly thickened and the anatomical picture may resemble very closely that of a fatal case of rheumatic pericarditis. The tubercles, however, can be seen with distinctness in the membranes, and there are usually flat areas of cheesy infiltration beneath the fibrinous layers. (c) In some cases the exudate is hemorrhagic, as in Cases I. and VIII. of my series. The membranes here may be deeply engorged, and hemorrhagic foci may be seen in them. The color of the effusion may be bright red, but is more commonly a reddish-brown or chocolate color. The amount of the effusion may be large, ranging from 500 c.c. to 2000 or 3000 c.c. An instance of most extensive effusion has been reported by Musser, with whom, when his colleague at the Philadelphia Hospital, I had an opportunity of seeing the case. The patient, a colored man, aged twenty, was admitted to the Philadelphia Hospital on the fifth week of an illness characterized by cough, dyspnoea, and irregular chills. There was extreme orthopnoea. There was absolute dulness over the greater part of the left chest from the second rib in front and from the middle of the scapula behind. There was an area of modified tympany along the vertebral column in the infra-scapular region. Thirty-seven ounces of a bloody fluid were aspirated, presumably from the pleural cavity. A distinct friction sound was heard after the aspiration, and it was thought that he had both pleurisy and pericarditis. At the post-mortem the pericardial sac contained sixty-four ounces of bloody serum. There were tubercles in both layers of the pericardium, also in the left pleura. The bronchial glands were enlarged and caseous. And, lastly, (d) the effusion may be purulent, and this, too, apparently from the outset and not following paracentesis. The exudation may be enormous, and the cases have been diagnosticated as left-sided empyema. In Kast's case, already referred to, the inflammation was due to perforation of a softened mediastinal lymph gland into the pericardium. No instance of purulent exudate has come under my direct care.

CLINICAL HISTORY.—We may recognize four groups of cases.

First group: Latent tuberculous pericarditis. A considerable number of all the cases on record belong here. The disease is discovered accidentally in individuals who have died of other affections, or of chronic pulmonary tuberculosis. An interesting illustration of this was Case XI., a well-nourished old man of seventy-two years, who was admitted to my wards in the Philadelphia Hospital with pneumonia, of which he died. There was no suspicion whatever that the pericardium was involved. As already mentioned there was found an adherent, greatly thickened, tuberculous pericardium; calcification of the bronchial glands, but no tubercles in other parts of the body.

In Cases VI., XII., XIII., and XIV. the disease was also latent, and there was no suspicion of pericarditis during life.

Second group: With symptoms of cardiac insufficiency following the dilatation and hypertrophy consequent upon chronic adhesive pericarditis. The clinical features are really those of cardiac dropsy.

CASE XIV.—W. H. T., aged fifty-two years, admitted to ward F of the Johns Hopkins Hospital, June 27th, 1889, complaining of shortness of breath, swelling of the legs, and incontinence of urine.

Family history good. Father died of acute pleurisy, mother of old age, two brothers died when young.

The patient has had scarlet fever, measles, and malaria; denies syphilis. Has had rheumatic pains, but has never been in bed with acute rheumatism. Has used tobacco freely, alcohol in moderation. He was well and strong until two years ago, when he had a "bilious attack," and was in bed three weeks. He was well last winter until February, when he began to be short of breath and had a cough, which has lasted until the present time. About four weeks ago the shortness of breath increased, and his feet became swollen.

Present condition: An emaciated man, with dry, harsh skin; legs and scrotum œdematous; abdomen not swollen. Pulse, 104, tension increased; temperature, 102°.

Heart: Apex beat faintly visible in the fourth interspace; palpable in the nipple line; feeble. Cardiac dulness begins as high as second left interspace, near sternum. To the right it extends 2.5 cm. beyond the sternum; there is no thrill. The sounds are feeble; the second louder, more marked than the first. At the apex the diastolic pause is shortened—the sounds succeed each other at equal intervals of time; the second, at the left margin of sternum, is reduplicated.

Careful examinations of the heart on the 1st and 2d of July showed as a special feature the flatness extending into the second left interspace; the impulse was extremely feeble; the sounds were clear, and in the third and fourth interspaces quite loud; the second was accentuated. At the aortic cartilage the second was feeble.

Lungs: Clear anteriorly; resonance defective at right base. There were numerous râles at base and cracking râles over the left mammary region.

Abdomen: Soft; liver and spleen normal.

Urine clear; no albumin, no casts; sp. gr., 1010.

The case was regarded as one of cardiac hypertrophy and dilatation without valve disease. He was given tincture of digitalis every four hours, and saline purges.

He failed rapidly; the heart became very feeble; Cheyne-Stokes breathing developed, and he died on the morning of the 5th.

On admission the temperature was 102° , but after this did not rise above 99° , except on the evening of the 30th.

Abstract of autopsy (by Dr. Welch). Peritoneum smooth. In the thorax there were extensive adhesions on both sides. The pericardial sac was obliterated. The heart occupied an unusually large area. The surface was everywhere covered by a yellowish-white opaque layer, consisting of firm connective tissue and caseous matter, containing, especially on the surface, numerous gray and cheesy miliary tubercles. These exudations averaged 1 cm. in thickness over the whole surface, the thickest being over the outer surface of the ventricle. The heart, including the thickened pericardium and the base of the aorta, weighed thirty-six ounces. The myocardium was pale yellowish-brown, soft, with mottled fatty degenerations beneath the endocardium. In the apex of the left ventricle there were a few parietal thrombi. The thickness of the wall of the left ventricle was 18 mm.; of the wall of the right, 6 mm. The cavities were dilated; the aortic valves slightly thickened, but competent. The mitral orifice admitted three fingers. The valve segments were a little thickened. There were small gray tubercles on the endocardium of the right auricle about the orifice of the superior cava.

The lungs were oedematous and deeply pigmented; they contained many gray, fibroid, not cheesy tubercles.

There were abundant miliary tubercles on the omentum. The spleen contained a few miliary tubercles. The kidneys presented a number of opaque caseous masses, many in streaks. The liver also presented a few tubercles. In the intestines there were a few scattered miliary tubercles in mucous and submucous layers, but no ulcers. There were no tubercles in the brain.

In the chronic adhesive form of tuberculous, as of simple, pericarditis, the clinical features may be those of cardiac dropsy, and a diagnosis is made either of simple hypertrophy and dilatation of the heart when, as in the case just given, there are no special auscultatory signs, or of mitral insufficiency when there is at the apex a loud blowing murmur. The diagnosis of adherent pericardium, always uncertain, is doubly so in cases admitted with dyspnoea, dropsy, and the signs of cardiac dilatation, since under these circumstances it is almost impossible to make a satisfactory physical examination.

Third group: Acute tuberculosis. The clinical picture may be that of an acute tuberculosis, either general or with cerebro-spinal manifestations. The following is a good illustration of an acute miliary tuberculosis, the primary disease being in all probability in the mediastinal glands and pericardium:

CASE XIII.—Moses B., aged twenty-four years, admitted to ward F of Johns Hopkins Hospital, January 25, 1890, complaining of cough and loss of strength. Owing to mental dulness and apathy it was difficult

to get any satisfactory information from the patient as to his family or personal history. He states that his present illness began only three weeks ago, though he has had a slight cough all winter. Since the onset of the illness he has been in bed and has had fever, cough, and night-sweats. There has been loss of appetite and great weakness.

Present condition: Temperature, 100.8°. Patient looks very heavy and dull; there are sordes on the lips, and the tongue is covered with a brownish fur. The skin shows traces of a squamous syphilide and there are well-marked nodes on the shins. The respirations are 37. The expectoration is muco-purulent and is at times blood-tinged. The physical examination of the lungs gives clear percussion resonance, the note perhaps a little higher in pitch at both bases behind. Anteriorly there are numerous piping and moist râles on the left side below the third rib; behind, the râles are universal.

Heart: Apex beat in fifth interspace below the nipple. The area of dulness does not appear to be increased. The first sound is very feeble and muffled at the apex, and possibly accompanied with a soft murmur. The second sound is well heard at the base, and both sounds are unusually loud to the right of the sternum in the sixth intercostal space. The examination of the abdomen is negative.

During the three days the patient was in the hospital there was irregular fever (from 101° to 103°), increasing debility, with hurried respirations, tremor of the extremities, and gradual failure of the heart. The bubbling râles were so numerous with inspiration and expiration, that it was impossible to hear the heart sounds. The examination of the sputum was negative. The urine was dark-yellow in color, acid, trace of albumin, and there were several casts seen. The diagnosis of acute tuberculosis was made.

Autopsy (by Dr. Welch). Abstract: Body of a large, strongly built, well-nourished, muscular man; macular eruption present on the skin; large node on the left tibia.

No special changes in the brain.

The deep cervical glands slightly enlarged, containing numerous small tubercles and caseous areas. Extensive pleural adhesions on both sides. Both layers of the pericardium were adherent over the entire heart, greatly thickened, and contained in the membranes numerous miliary tubercles. The anterior mediastinal lymph glands were enlarged and presented numerous miliary tubercles and caseous masses. The heart was enlarged and dilated. The length of the left ventricle from apex to edge of aortic valve, 13 cm.; thickness of wall of the left ventricle, 16 mm.; the columnæ carneæ in the left ventricle were extremely prominent.

The lungs were congested throughout, oedematous, and contained scattered tubercles surrounded by areas of pneumonia. No caseation except in the tubercles themselves. The mesenteric glands were enlarged and those near the spleen were caseous. The kidneys showed much fatty degeneration in the convoluted tubules.

In the following case the tuberculosis was chiefly manifested in the cerebro-spinal meninges, and the clinical picture was that of ordinary tuberculous meningitis:

CASE XIV.—John T., aged sixteen years, admitted to ward F of Johns Hopkins Hospital, November 5, 1889, complaining of pain in back and head. Patient is well-nourished, not emaciated.

His mother is dead; father, five brothers, and six sisters living and well; does not know of what his mother died; says he has been ill for three weeks with headaches, tired feelings, pains over the body. He has been obstinately constipated for ten days; has been in bed for two weeks; says he had a chill a week ago. When admitted he looked very ill; temperature, 95°. After having been in bed for two hours with hot bottles to his feet, temperature rose to 98°. He passed a quiet night; temperature rose to 101° at 8 P.M.; pulse, 72.

On the 6th, the examination revealed the following: Tongue heavily coated, white. Patient is rational, answers questions well, but shows a great dislike to be moved in bed; lies on the left side with the head a little drawn back, and when an attempt is made to move him he resists, saying that it is painful. There is no paralysis; pupils are of medium size and active. Abdomen not swollen, not tender. Spleen not enlarged. Heart sounds are clear at apex and at base. Examination of lungs negative.

On the 7th and 8th he was much worse; became apathetic; rambled; the temperature ranged from 97° to 102°. Heart was examined again on the 8th, and the note reads: "Sounds at apex and base are quite clear."

On the 9th and 10th the meningeal symptoms were more pronounced; he became unconscious and the discharges were passed involuntarily. At times the arms and legs seemed a little stiff, resisting flexion. Pupils moderately dilated; convergent squint in left eye; the retinal veins slightly distended and engorged; no swelling of the disks, but the physiological cupping was absent.

On the 11th there was a good deal of rigidity of the arms and of neck. Abdomen retracted. Death took place on the morning of the 12th.

The case was regarded as one of meningitis, probably tuberculous. There were no features calling special attention to the heart.

Autopsy (by Dr. Welch). Abstract: In thorax, glands at root of neck and in mediastinum enlarged and caseous. A very large caseous gland lay just beneath the ensiform cartilage. One was closely adherent to the pericardium. Some of these glands were full of miliary tubercles. The external surface of the pericardium was thickly studded with small tubercles. The two layers of pericardium were adherent, and between them was a mass of partly caseous, partly gelatinous-looking tissue from two to fourteen millimetres in thickness. Over the left ventricle was a small cavity filled with cheesy pus. The heart weighed 542 grammes. The muscle substance was firm. Wall of left ventricle, 14 mm.; of right, 3 mm. Valves were normal.

The lungs presented numerous irregular areas of hemorrhage, chiefly beneath the pleura. There were no tubercles. On the pleural surface of the diaphragm, extending from the pericardium on the right side, there were a few miliary tubercles. No special changes in liver, spleen, and kidneys. The brain and spinal cord presented a typical picture of tuberculous meningitis.

Fourth group: Cases with symptoms of acute pericarditis. This group, the most important in many respects, includes cases in which the pericarditis is acute and accompanied with more or less exudation of a sero-fibrinous, hemorrhagic, or purulent character. Here,

too, the process may be latent, as in Case VII., a young man aged twenty-eight years, who died under my care, of hæmoptysis. There was chronic tuberculosis of both lungs with extensive pleural adhesions. "The layers of the pericardium were united by soft adhesions, which could be readily torn through. On each membrane were innumerable small granulations, and here and there a nodular tubercle from one to two millimetres in diameter." This case is of special interest, as it shows the first stages of the process which ultimately causes enormous thickening of the pericardial membranes with universal adhesions. The tubercles, when small, may be readily overlooked. Acute plastic pericarditis in chronic tuberculosis is not, however, always due to the eruption of miliary tubercles. In two recent autopsies on patients with chronic pulmonary tuberculosis dying in my wards there was simple pericarditis without a trace of tubercles, and with little or no exudation. The following case, which was admitted to ward E under the care of Dr. Thayer in my absence, illustrates the mode of onset and the clinical features of a tuberculous pericarditis which came on in a strong, well-developed, muscular man, and proved fatal within three weeks:

CASE XV.—John P., aged thirty-eight years, admitted August 18th, with swelling of the legs and dyspnœa. The family history is good. He has been, as a rule, healthy, though in his childhood and youth he had many of the infectious diseases. He has been a moderate drinker. He denies syphilis. The present illness began about two weeks ago with pain in the left shoulder and about the heart. Feet began to swell ten days ago, and he has had cough and shortness of breath for about the same length of time. He has had no nausea; his appetite has been fairly good. Within the past few days he has become much worse.

On admission the patient had intense orthopnœa; pulse 130, but moderately full. He had a distressing cough, with clear watery expectoration. There was great œdema of the lower extremities and of the scrotum. The finger-tips and mucous membranes were bluish in color. In the examination of the heart at the time no murmur could be detected, but the second sound was accentuated at the pulmonary cartilage.

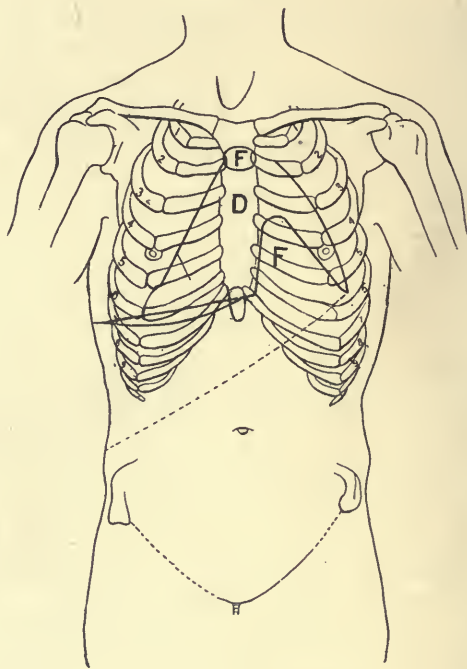
On the following morning the patient was quiet; respirations 28 to the minute; pulse 84, the beats irregular both in rhythm and force, the volume fair, and tension not diminished.

Thorax apparently symmetrical, but the manubrium very prominent, expansion equal. In front, resonance on both sides good, though on the left side flatness begins at the fifth rib midway between the nipple and axillary line, and the dulness seems here to be somewhat movable. There are numerous sibilant and sonorous râles to be heard in front. Passing down the left side and into the axilla, the breath-sounds become more feeble and fine moist râles are heard. Pitch of resonance at the extreme left base is higher than at the right, and the vocal resonance is somewhat diminished.

On auscultation there are numerous coarse and medium fine râles to be heard at both bases. At the extreme left base the respiratory murmur is almost absent.

Heart: Point of maximum impulse difficult to localize; slight general heaving over the whole præcordial area; relative dulness begins above at second rib and extends well to the right of the sternum. The prominence above noted is just at the junction of the manubrium and gladiolus, and just at this point there is dulness over a very limited area. Relative dulness extends outward to a point nearly 5 cm. outside

CHART I.



D. Dull area. F. Flat area.

the nipple. (Chart I.) The heart-sounds are heard with the greatest intensity at the fifth space a little inside of the nipple line. There the first sound is full and booming; the second not so loud. Passing inward toward the sternum the sounds become associated with a superficial, soft, squeaking sound, diastolic in time, heard loudest over the mid sternum, and pericardial in character. This is heard faintly all over the base. The murmur is more distinct in forced expiration than during inspiration. The second pulmonic is a trifle louder than the second aortic sound. The radial pulses are equal in volume, and there is no pulsation in the upper sternal notch; there is no tracheal tugging. The examination of the abdominal organs is negative. The urine is yellow-colored, acid, sp. gr. 1024, distinct trace of albumin; several hyaline casts were found. Throughout the 20th and 21st the patient remained in much the same condition. On the 22d there was a slight rise in temperature to 100.5°; the pulse varied greatly in rate and character; at noon was slow, regular, and full, from 70 to 90 per minute,

and again was as rapid as 140. The patient, in many respects, was better. The œdema of the legs had disappeared. The urine had increased in quantity. On the 19th only 180 c.c., and on the 20th 350 c.c. had been passed. On the 21st and 22d the amounts were 700 and 1100 c.c.

23d. The temperature has been between 97° and 98°; at the morning visit the pulse was 148, regular in force and rhythm; the respirations 32. The patient was lying quietly on left side. The physical signs practically those noted above with the exception that there is an extension of the œdema at the bases of the lung. The patient died suddenly at 4.30 P.M. to-day.

Autopsy (by Dr. Flexner). Large, muscular man; moderate œdema of the legs and of the subcutaneous tissue of trunk. Fat well retained, both beneath skin and in omentum and mesentery.

Pericardium is adherent to the left pleura; the sac thickened and contains a considerable amount of clear serum. Both layers are covered with a thick fibrous deposit, looking like a hairy coat. The thickness of the pericardium over the heart is 3 mm. When incised the thickened layer is grayish in color, with many opaque or yellowish points scattered here and there, often continuous, and having the well-recognized characteristics of tubercles of this membrane. The heart was greatly enlarged. The valves were normal. The thickness of the left ventricle was 17 mm.; length of ventricle, 8½ cm.; mitral orifice, 10½ cm. in circumference. Thickness of right ventricle, 6 mm.; tricuspid orifice, 12 cm. in circumference. The walls of the auricular appendix are almost completely converted into a grayish-white material with only a thin internal film which appears like muscle. In the endocardium of the left ventricle are numerous ecchymoses. There are also a few small ones on the right ventricle and in the auricles, and on the endocardium of the auricles are a few small, round, whitish miliary tubercles.

The left pleura is much thickened; parietal and costal layers adherent in places, but where not in actual contact there is clear serum between them. The costal pleura strips up with difficulty, and is very hard and cuts like cartilage. The diaphragmatic pleura is especially thickened, and on section it is seen to be composed of a dense, almost cartilaginous, grayish tissue, containing yellow, opaque, caseous masses. The apex of the left lung is retracted, hard to the touch, and on section contains a dense, deeply pigmented connective tissue, and old areas of caseation; no calcification. There are a few small foci of miliary tubercles, and scattered fibrous tubercles elsewhere in the lung.

The right lung is voluminous, and in the greater part of its extent free from adhesions, but the pleural surfaces present numerous grayish-white elevated masses, single and conglomerate, which can be scraped off with difficulty. The costal pleura presents similar tubercles. About these there are, here and there, fresh fibrin. In the apex the upper lobe presents a few foci of fibrous miliary tubercles.

The spleen contains a few scattered tubercles. Nothing of note in the abdominal viscera; the intestines did not present tubercles.

Here there was no suspicion before death that the process was tuberculous, nor in reality was there any clew to indicate that this was the possible nature of the trouble.

The following instance is the only one which has come under my

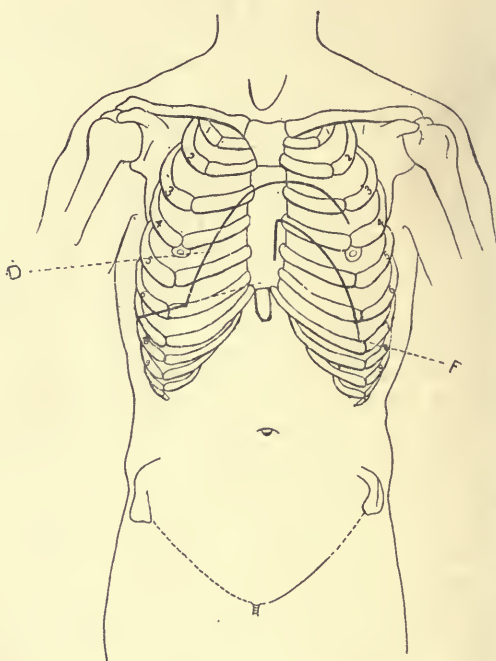
notice, in which the diagnosis of tuberculous pericarditis was made with reasonable degree of probability.

CASE XVI.—E. B., aged thirty-nine years, washerwoman, colored; admitted to ward G of the Johns Hopkins Hospital, July 18, 1892, complaining of pain and swelling in the abdomen, swelling of the feet, and cough.

So far as could be gathered the family history is good. She has two brothers and four sisters living and well.

The patient is a married woman, has had two children, one miscarriage. Has had uterine trouble at times, but has been quite regular until

CHART II.



D. Dull area. F. Flat area.

two months ago. Since childhood, during which she had the ordinary infectious diseases, she has enjoyed very good health.

Her present illness began early in May, when she had shortness of breath, nausea, loss of appetite, and pain in the abdomen. The symptoms which she narrated are indefinite, and she speaks of headache and attacks of diarrhoea. The main points are that she has, during the past three months, been in bad health, has lost in weight, has had difficulty in digestion, and shortness of breath. About a month before admission she noticed some swelling in the abdomen, and about the same time the face became puffy. The feet began to swell four days ago. She has sometimes had attacks of coughing at night, but no expectoration. On

admission, the note made by Dr. Thayer was as follows: Rather sparsely nourished woman; dorsal decubitus; lips and mucous membranes somewhat pale; tongue slightly coated; respirations 30 per minute; pulse 104, regular in force and rhythm, tension not increased; temperature on admission 98.2° .

Expansion equal on both sides of the thorax. Percussion everywhere clear. On auscultation the only abnormal signs are fine moist râles during inspiration at both apices.

Heart: There is slight heaving in the cardiac area; the point of maximum impulse is hard to determine. The area of cardiac dulness, as indicated on Chart II., begins about the second rib and extends far to the right of the sternum. Flatness begins at the third. The general outline of the area as indicated is triangular, and it extends to the left, far down into the seventh interspace. This flatness in the cardiac region is distinctly movable.

On auscultation the sounds are feeble at the apex, become louder in the fourth and fifth interspaces, and are still more distinct at the base, where the second aortic sound is accentuated.

Abdomen: The abdomen is full, generally tympanitic, and the walls are a little tense. The liver flatness begins at the seventh rib in the nipple line, and extends five fingers' breadth below the costal margin. The edge is not distinctly palpable.

The spleen is not palpable.

There is now no swelling of the legs, but she states that they were swollen four days ago.

The urine was cloudy, acid, sp. gr. 1012; slight trace of albumin, no sugar, numerous leukocytes.

During the first ten days in hospital the patient improved. The temperature chart shows a great irregularity. The morning register was at 98° or 98.5° , and in the afternoon, between four and six o'clock, rising to 101° , sometimes to 103° . An ice-bag was placed over the heart and she was given stimulants. For the second ten days, from July 29th to August 8th, there was distinct improvement; the temperature was lower and only once reached 102° . On August 1st it was noted that the area of dulness was diminished, and there was a friction rub heard in the mid-sternal line—synchronous, however, with the respiratory, not with the cardiac movements. On the 3d it was noted that there was a well-marked rubbing friction heard in the second and third left interspaces, and heard as far out as the nipple line and over the sternum adjacent to these spaces. This was the first time since her admission that there was a well-marked friction sound. The pulse has been very variable, ranging from 98 to 112. The patient is brighter and seems to be improving.

Between August 8th and 20th the irregular fever persisted, and on several occasions rose in the afternoon to 103° . She complained at times of pain in the præcordial region and of general abdominal pain. The pulse has ranged from 100 to 125. The note on the 17th was as follows: "There is moderate heaving over the lower sternum and the epigastrium; the point of maximum impulse is rather difficult to determine. Relative dulness begins at the second rib and extends well to the right of the sternum. The absolute flatness, however, scarcely exceeds the normal limit. The heart-sounds heard at the outer limit of the dulness are very feeble, and the first is followed by a short systolic puff. Passing inward the murmur becomes louder, and it disappears above the fourth rib. In

the lower sternum there is a well-marked double friction murmur, soft, close to the ear, and resembling in this respect a pericardial murmur. The murmurs are more intense on forced inspiration."

From September 1st I saw the case daily.

September 11th. Note to-day was as follows: "The intermittent type of fever has persisted, temperature in the evening rising to 102.5° , and occasionally, as on September 6th, to above 103.5° . The pulse has been more rapid, frequently over 120. There has been a good deal of tenderness over the fourth and fifth costal cartilages on the right side.

"On percussion the flatness does not begin until the fourth rib, but extends beyond the right border of the sternum. The sounds at the apex are feeble, and there is heard here a slight pericardial friction murmur which becomes more distinct toward the ensiform cartilage. No endocardial murmur is heard. Of late the cough of which the patient complained on admission has become much more troublesome, but there is no expectoration. The percussion note at the left base is somewhat higher than at the right, and the breathing is feebler, and toward the axilla somewhat tubular in character. There are numerous râles at both bases. The abdomen is a little full and she complains of pain in it."

On the 13th a small quantity of muco purulent sputum was obtained which did not contain tubercle bacilli. During all this time, although the fever has persisted, she has, curiously enough, steadily gained in weight; thus on August 8th she weighed 104 pounds; on the 16th the same; on the 29th, 109 pounds; September 5th, 110; and September 13th, 114 pounds.

September 22d. The abdomen has become more swollen. On examination there was distinctly movable dulness, though fluctuation could not be readily obtained. There was tenderness in the region of the liver, but no nodular masses could be felt. The friction murmur up and down the sternum was more marked, and there was also heard on inspiration a creaking, leathery, friction sound. The physical signs in the lungs show increase in the râles which are heard over the whole of the right back. The tactile fremitus is a little increased, and resonance is defective at the right base. There is no pleural friction.

On the 25th it was noted particularly that the pitch of the percussion toward the outer side between the scapula and the axilla was higher, but without any trace of tympanitic quality. The pericardial murmurs are loud. During the past week the patient has been worse. There is more pain in the epigastric region, the cough is very worrying at night, and there is increasing œdema about the legs and the skin of the back.

At her own desire the patient was taken to her home on September 27th.

Up to September 1st the patient had been under the care of my first assistant, Dr. Thayer, and the case was regarded as one of pericarditis with effusion, and when he left for his vacation she seemed to be improving. During the time she was under my care I made her the subject of several very careful examinations, and repeatedly demonstrated the condition to the class of graduate students, and discussed frequently the probable nature of the trouble. The persistence of the fever and the marked involvement of the lungs suggested to my mind the possibility of the existence of tuberculosis. We could not, however, for some time obtain any sputa for examination, but after September

1st, on several occasions she brought up a muco-purulent, and once an almost purulent expectoration, which was very thoroughly examined with negative results. Notwithstanding, it seemed to me that the case was unlike any ordinary rheumatic or septic pericarditis, and I felt justified in dictating, the last morning I saw her, "that the protracted course of the illness, the signs of pulmonary trouble, and swelling of the abdomen, make it probable that the patient has tuberculosis." Three days after her return home she died, and we were fortunate enough to secure an examination, which was kindly made by Dr. Flexner. The following is an abstract of his report:

Autopsy. There was a considerable quantity of clear serum in the peritoneum, both layers of which were smooth. There were no pleural adhesions, no tubercles on either layer. The pericardial space uncovered by lung unusually large, measuring 15 by 20 cm. The parietal pericardium is everywhere free. The outer surface shows numerous white elevations, many of which are confluent and more massed in some places than in others. On incision the layer is greatly thickened, in places as much as 6 mm. About 300 c.c. of turbid serum escaped. The visceral layer was everywhere covered with flaky, yellowish-white fibrin. On section this layer is greatly thickened and contains numerous yellowish; caseous masses; thus the thickness of the wall of the left ventricle is 3 cm., nearly one-half of which is the thickened pericardium. At the root of the aorta are masses of caseous glands, adherent to the pericardium. The weight of the heart with the thickened sac was 1110 grammes. The chambers were dilated. There was no valvular disease.

The lungs were voluminous, contained many scattered and conglomerate tubercles, many of which were just beneath the pleura. There was diffuse bronchitis, but there were no cavities. The bronchial glands were caseous. Liver, spleen, and kidney contained tubercles; those in the spleen were large and caseous. There were a few small tuberculous ulcers in the small intestines. The mesenteric glands and the glands about the pancreas were caseous.

DIAGNOSIS.—The diagnosis of tuberculous pericarditis is extremely uncertain. In the large group of cases in which the membranes are thickened and united, the difficulties are those which pertain to the recognition of adherent pericardium, difficulties which are enormously enhanced by the state of cardiac insufficiency with which these cases usually come under observation for the first time. In children with a history of repeated attacks of rheumatism, the bulging præcordium, systolic retraction at the apex, the fixation of the upper limit of cardiac dulness, and the diastolic rebound, speak for adherent pericardium; and if in a case of this sort there has been no history of rheumatism, and if, on the other hand, there are indications elsewhere of tuberculosis, a probable diagnosis may be made. In the cases which set in as acute pericarditis, unless there are evidences of tuberculosis in other parts, as, for instance, in the left pleura or in the peritoneum, or there are signs of local disease in the lung and tubercle bacilli have been found in the expectoration, the diagnosis can rarely be made. The effusion may be

equally as great in tuberculous as in rheumatic pericarditis. If paracentesis be performed, the presence of a bloody exudate is decidedly in favor of tuberculosis; once, at least, tubercle bacilli have been found (Kast). The clinical features themselves offer no criteria, though it would seem probable that in the acute cases with sero-fibrinous exudation the course is more protracted and the fever more irregular than in the ordinary forms of pericarditis; and in such a case, as in XVI. in my series, the development of diffuse signs in the lungs may lead to a strong suspicion that the process is tuberculous.

TREATMENT.—It is not improbable that tuberculosis of the pericardium may, as a similar process in the peritoneum, recover completely. Possibly some of the cases of simple adherent pericardium are instances of healed tuberculosis. The chronic adhesive form persists in all likelihood for years, producing few if any symptoms until the compensation fails in the hypertrophied and dilated heart.

It is highly probable that a majority of cases which terminate in general synechia of the membranes present no clinical features; the process is slow, insidious, essentially chronic, and not associated with definite symptoms. A case which has set in acutely must be dealt with as any other form of pericarditis, the indications being, first, to limit, if possible, the intensity of the inflammation; and, secondly, to prevent the evil consequences of the presence of a large amount of fluid in the sac. We have no medicinal agents at our command which have any positive influence in controlling the ordinary inflammation of serous membranes. In *Guy's Hospital Reports* of a year or two ago, *apropos* of the treatment of pericarditis, there is a story told of Sir William Gull which is worth quoting in this connection. "He once met a practitioner on a case of rheumatism, in which he detected a pericardial rub. He said nothing of this to the patient's friends, but approved the general treatment, and they came away together. 'Oh, Dr. Gull, it was very good of you not to let them see I had made that dreadful oversight. I cannot think how I can possibly have failed to detect the pericarditis.' 'Never mind,' said Gull, 'it is just as well; for if you had detected it, perhaps you might have treated it.'" There is one measure in the utility of which we may have great confidence, namely, the ice-bag applied continuously over the præcordium. It allays the pain when present, and appears to check the tendency to effusion, while under its use an exudate may be absorbed with rapidity. It is very much to be preferred to blisters or the thermo-cautery. In some instances the patients complain very much of the intensity of the cold of the ice-bag, and in such I was in the habit, in Philadelphia, of using Leiter's coil, through which the water flowed continuously, and it could be arranged to have any temperature thought necessary.

A second indication holds good in tuberculous as in other forms of

pericarditis—when the effusion reaches a certain grade, and the pulse is irregular and feeble, the color becoming bad, the respirations hurried, paracentesis should be performed, or, if necessary, the sac freely incised and drained.

THE TAMPON IN MENORRHAGIA.

BY WILLIAM T. LUSK, M.D.,
OF NEW YORK.

Is the tampon a childish expedient in recurrent profuse hemorrhages at the menstrual epoch? In certain cases its use has been recommended by Gehrung, by Mays, and by Reeves Jackson. Still, with the profession at large, respect for menstruation as a physiological function has a dominant influence in determining treatment.

I am prepared to admit in advance that, as a rule, menorrhagia is the result of pathological conditions, viz., of inflammatory thickening of the endometrium, with increased vascularity and polypoid growths, and of enlargement of the uterine cavity, with consequent increase of the bleeding surface. The changes in the endometrium may be due to a primary inflammation, or, may be secondary to displacements, to neoplasms, to obstructions of the cervical canal, to connective-tissue changes in the uterine walls, to imperfect involution, and to retention of portions of the ovum following abortions or childbirth. In all these, and in similar instances, a rational therapeusis should unquestionably be directed to the source and origin of the evil.

But there still remain cases in which no definable cause is recognizable. The curette, uterine drainage, and internal remedies fail to afford relief. The recovery of the patient between the menstrual periods becomes more and more incomplete, and the conditions resulting from profound anæmia lead to hopeless invalidism. In such cases the question is often broached as to whether the ovaries had not best be removed. "Normal ovariectomy" is practically devoid of danger. If the removal of the tubes and ovaries is complete the hemorrhage will cease. The relief of suffering following the removal of incurable pus tubes is one of the most brilliant achievements of modern gynecology, and is cheaply purchased by the sacrifice of the ovaries. But in the class of cases under consideration, especially if the patient be young, the loss of the ovaries has not seemed to me to be a matter of indifference. The medical men to whose care these patients ultimately fall will bear me witness that many of them subsequently display symptoms of mental and moral perversity, and that all dislike the thought that they are "different from other women."

For this reason I have been led, when other lines of treatment have proved ineffective, to resort in anæmic patients to the tampon as a means of restraint or repression at the menstrual period. By this plan opportunity is afforded for the continuous repair of the blood, and for the restoration of disordered function. At first it was with a feeling of timidity that I ventured to employ the tampon upon the first evidences of menstruation, but experience speedily showed that the practically complete repression of the menstrual flow is absolutely harmless.

However elementary it may seem, it may be well to state that the method of tamponing is not a matter of indifference. At least, personally, I have only got satisfactory results when following the procedure of the late Dr. Marion Sims. He advised, as material for a tampon, wads of cotton of suitable size soaked in carbolized water and compressed into the form of flattened disks. These, by means of a Sims speculum, should be applied firmly to the vault of the vagina. It is important that they should be placed with the flattened surface in a transverse direction, rather than in one parallel to the vagina, and that the packing should be arrested at the urethro-vaginal septum. At the end of twenty-four hours the tampon should be removed, the vagina should be irrigated, and a fresh tampon should be introduced. When thus employed for forty-eight hours, the flow is usually ended. In rarer cases a third application of the tampon may be called for.

It is interesting to watch, as the result of this plan, the restoration of the patient to health. In time, likewise, the normal tonus of muscular structure of the uterus is restored, and the further use of the tampon ceases to be necessary.

As an illustration of the beneficial workings of the tampon, I select the following instance:

Mrs. F., aged thirty-six years. In girlhood had obstructive dysmenorrhœa, associated with retroflexion and stenosis of the cervical canal, for which she received treatment from the late Dr. Elwood Wilson. At nineteen she married; she had two miscarriages in the first year of her married life; afterward she gave birth to three children at term. During gestation she always experienced a peculiar exhilaration and sense of *bien aise*. With the weaning of her children, which was usually delayed until the second year, the menstrual flow returned, and was characterized by great profuseness. For this the usual remedies, internal and local, were employed, including ergot, viburnum, hydrastis, tannin, cannabis Indica, curetting, and applications of iodine to the mucous membrane. All were of no avail. There were no fungous growths obtained by the repeated scrapings. After the birth of the third child I repaired a laceration of the cervix of moderate extent.

The menstrual period lasted from five to six days. For ten days following the patient was compelled by dizziness to remain in bed or upon a couch in the recumbent posture. Gradually a neurasthenic condition developed, characterized by insomnia, multiform neuralgias,

palpitations of the heart, and hysterical twitchings. For two years, owing to flatulent dyspepsia, she lived exclusively on a meat diet. Finally she withdrew altogether from society and devoted her entire time to a contemplation of her symptoms. Her weight fell from 140 to 97 pounds.

From the time of the performance of Emmet's operation, in 1889, she lost faith in medical aid, and was guided in her treatment, for the most part, by the volunteer counsel of non-professional friends. Her husband discussed her case with an eminent gynecologist, who advised removal of the ovaries, but the proposition was promptly and indignantly rejected by the patient, whose maternal instincts were strong.

In January last, when I called to visit one of the children, I was shown by her husband the contents of a chamber, which contained fully a pint of pure blood. Similar losses, he assured me, were the rule at her menstrual periods. I at once introduced a tampon and checked the bleeding. The tampon was renewed upon the two succeeding days, when the flow ended.

Acting upon the theory that the primary cause of the trouble had been protracted lactation, and that its persistence was due, not to any organic disease, but to the relaxed condition of the uterine muscular fibre, I administered iron and food, the latter at first in small quantities at short intervals, and, afterward, as her digestion improved, I persuaded her, though with many misgivings on her part, to adopt a mixed diet. Since January, with the return of each period, I have employed the tampon for two days. The patient has gained twenty-two pounds. Sleep, appetite, strength, and color have returned. All her morbid fancies have disappeared. She is one of the happiest women in my *clientèle*, and never ceases to rejoice that she still possesses her ovaries, and that she has not been robbed of the hope of some day again becoming a mother.

METHODS AND RESULTS IN CASES OF TUBERCULAR DISEASE, ANEURISM, UNUNITED FRACTURES, AND HEAD INJURIES.

BY J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE
UNIVERSITY AND GERMAN HOSPITALS, ETC.;

AND

ALFRED C. WOOD, M.D.,

ASSISTANT SURGEON, UNIVERSITY HOSPITAL; INSTRUCTOR IN CLINICAL SURGERY,
UNIVERSITY OF PENNSYLVANIA.

THE following cases have occurred in the recent service of Dr. J. William White, in the Hospital of the University of Pennsylvania, and have been selected chiefly from that of the eighteen months ending June, 1892. A few cases dating further back have been included, and two or three quite recent cases of special interest have been added. The list includes a large number of private patients operated upon at the hospital, as well as the ordinary ward cases.

It is worthy of note that in some thousands of etherizations not once were symptoms noted which occasioned serious alarm, while in not over two dozen chloroformizations one child narrowly escaped death from the anæsthetic.

The details of modern antiseptic practice have invariably been rigidly adhered to. The usual preparation of the field of operation is carefully carried out. The part is first shaved, then thoroughly scrubbed with soap and hot water, then washed with alcohol, and finally with bichloride solution 1 : 1000. If the patient is admitted to the hospital in time, and this is always desirable, this cleansing is carried out the day before operation, after which the part is kept wrapped in towels wrung out of sublimate solution 1 : 3000. The bowels are well cleared out by a laxative given in the evening, aided if necessary by an enema given the following morning. After a light breakfast no further nourishment is administered till after the operation. After anæsthetization, and immediately before the first incision, the part is again thoroughly cleansed with alcohol and sublimate solution 1 : 1000.

All instruments are boiled for twenty minutes in water containing one per cent. of sodium bicarbonate. This makes the boiling-point of water slightly above 212° F., and prevents the rusting of the instruments. From this solution instruments are transferred to trays containing hot boiled water. Sponges are wrung out of 1 : 4000 bichloride solution. Vessels are tied with sterilized silk or catgut. Silkworm-gut is preferred for suturing. Clean, incised wounds in healthy tissues are closed. Where drainage is necessary, strands of sterilized silk or a fenestrated rubber tube is used. Lister's latest dressing, the double cyanide of zinc and mercury, and the bichloride dressing wrung out of a 1 : 3000 solution have been employed. Both present points of advantage, and either makes a satisfactory dressing.

The cases have been grouped from a clinical standpoint, and histories which would represent simply repetitions with minor points of difference have been omitted.

The clinical diagnosis of all neoplasms has been confirmed by microscopical examinations.

TUBERCULAR ADENITIS.

During the period embraced in this report, seventy-six operations have been performed for this affection. The tumors were found in the following regions: cervical region, 55; axilla, 7; inguinal region, 5; miscellaneous, 9. The majority of the patients were children or young adults. All recovered. The histories are so similar that a brief outline will suffice for the group. Usually there had been lesions of the area drained by the lymphatics communicating with the inflamed gland, thus opening the way to tubercular infection or rendering active

a latent tuberculosis. When the cervical glands were involved, inflammations or catarrh of the tonsils, fauces, or pharynx, carious teeth, middle-ear disease, or eczema of the scalp, have been the lesions preceding the tubercular infection.

About two-thirds of the patients gave a tubercular family history.

Experience in this service has convinced us that, although a gland thus infected may remain quiescent for a long time, may undergo caseation or softening, or, if subsequently infected with pyogenic microorganisms, may suppurate, it rarely undergoes spontaneous resolution. Most of the patients had been treated locally and constitutionally for long periods before applying for relief by surgical measures, apparently without benefit in any individual case. The propriety of removing such diseased glands is undoubted. Objections have been made on the grounds that an operation may kindle a latent tubercular affection, or cause a local disease to be rapidly disseminated. With regard to the former, it must be remembered that latent tuberculosis of these glands frequently becomes active without discernible cause; the latter objection is largely theoretical; both lack the support of experience. Neither of these untoward results has occurred in this service. Moreover, operation insures a much less conspicuous scar than when the diseased glands are allowed to open spontaneously.

The method of operation depends upon the stage the disease has reached. If softening has not occurred, excision is preferred, and all enlarged glands are removed, the wound being closed as in any other non-infected wound. If softening or suppuration has taken place, erosion is selected; or if all diseased tissue cannot be removed in this way, combined excision and erosion are employed, all infiltrated or ulcerated skin being sacrificed. In those cases in which a clean excision has been impossible and primary union cannot be expected, the cavity is swabbed out with a solution of zinc chloride, 30 to 60 grains to the fluidounce of water, and the wound is packed with iodoform gauze. Even with the greatest care, minute infected glands may be left behind and recurrence sometimes follows. These are removed as soon as they are detected.

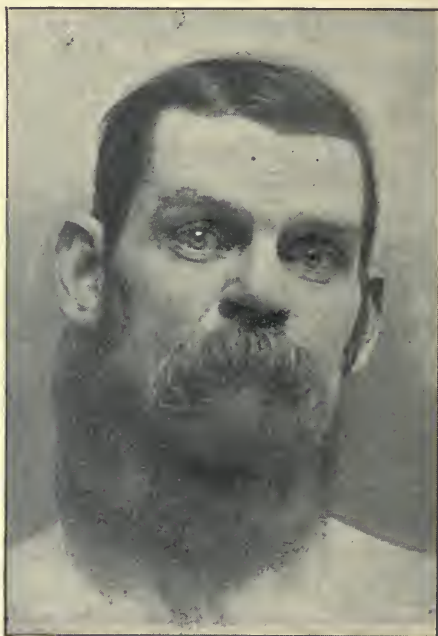
Some of the operations upon the neck have been extremely delicate and tedious, requiring prolonged and careful dissections. The sheath of the great vessels was usually exposed, and not infrequently the growth was intimately adherent to it. In two cases lateral ligatures were applied to the internal jugular vein to check bleeding occasioned by the tearing away of small veins at their point of entrance to the main trunk; the tumor has frequently been found in close relation to the transverse processes of the cervical vertebrae. In one case it was necessary to divide the omohyoid and sterno-mastoid muscles, the superior cervical plexus, the spinal accessory nerve, and the external jugular vein, in order to remove the entire mass. In some instances the chain

of glands was followed as far as the subclavian vessels. The patients all made satisfactory recoveries. When the wounds were closed, prompt union followed. The wounds in the cases which were treated by the open method, granulated rapidly and closed firmly.

One non-operative case may be mentioned, which, when measured by its results, is of considerable importance. This patient was treated by deep injections of a sterile 10 per cent. emulsion of iodoform in glycerin. The case is as follows:

T. S., male, aged forty-four years, married, butcher, applied for advice on account of a large, hard, firmly fixed growth on the right side of the neck, lying under the sterno-mastoid muscle, and apparently involving it and the anterior edge of the trapezius in the diseased process. The infiltration followed the course of the sterno-mastoid as far as the clavicle (Fig. 1). It was

FIG. 1.



Tubercular adenitis with infiltration of surrounding tissues.

irregularly lobulated. A smaller lump was found just beneath the chin, and a similar but less marked infiltration existed on the opposite side of the neck. About the neck were scars marking the site of six previous operations for the removal of enlarged glands. The grandfather and an aunt of the patient (both on the mother's side) died from consumption. The seat and appearance of the growth, its chronic, sluggish course, the absence of inflammatory symptoms and pain, its solid character, and the frequent recurrences led to the diagnosis of tubercular adenitis. The small fluctuating tumor under the chin was excised. The large mass on the side of the neck, however, seemed so extensively diffused, had infiltrated and involved so many of the adjacent tissues, and would have required for its removal such an exten-

sive destruction of important structures, that it was decided to employ deep injections of iodoform. For this purpose a mixture was made of sterilized iodoform 1 part and boiled glycerin 9 parts. Ten minims of this were injected deeply into the tumor at different points, at intervals of ten days. To avoid throwing the mixture directly into the circulation the hypodermatic needle was first driven into the indurated mass; if no blood flowed through this the syringe was attached and the iodoform-glycerin was injected. Twelve injections were given. Each occasioned slight ephemeral pain, and local reaction lasting not over forty-eight hours. Under this treatment the swelling has almost entirely subsided, merely a general thickening remaining (Fig. 2). While the

FIG. 2.



Effect of treatment by iodoform injections.

patient was under observation, other glands became enlarged, but entirely disappeared after the use of the injections. The patient's general condition has greatly improved; he is cured of a cough from which he suffered for months, has gained in weight, and is again working at his trade.

Whether the favorable result in this case is due to the specific influence of iodoform on the tubercle bacillus, or is brought about by what Lannelongue terms sclerogenesis—*i. e.*, the conversion of the tuberculous infiltrate into fibrous tissue, which encapsulates and destroys or renders innocuous the bacillus—is still *sub judice*. The majority of surgeons believe that iodoform acts as a specific, though injections of irritating solutions, such as chloride of zinc, have given good results in certain forms of surgical tuberculosis.

TUBERCULAR ARTHRITIS.

Five cases of tubercular disease of the knee-joint have been subjected to operation, and one case has been treated with injections of iodoform and glycerin.

CASE I.—Lucy C., aged fourteen years; disease of one year's duration. The knee had the characteristic appearance of tubercular arthritis of this joint. Arthrectomy was performed, all infected tissue being removed, including a point on the internal condyle having a suspicious appearance. The divided ligamentum patellæ was sutured and rubber drainage was introduced. The wound was dressed antiseptically and fixation was obtained by a Gooch's splint. Healing was satisfactory and the patient recovered with fibrous ankylosis in the straight position, without any shortening.

CASE II.—G. K., male, aged twenty-seven years; suffered from tubercular inflammation of the knee-joint. As the disease was apparently limited to the synovial membrane, the operation of arthrectomy was performed, as in the preceding case. The patient recovered with a useful limb.

CASE III.—W. C., aged twenty-six years; suffered from extensive tubercular disease of the knee-joint and contiguous structures. Excision was performed, but the tubercular involvement was too widespread to be entirely removed by the operation; sinuses remained which continued to discharge, and it became necessary to perform amputation at the lower third of the thigh. Prompt healing followed.

CASE IV.—H. R., male, aged eleven years; suffered from tubercular disease of the left knee-joint. Excision was performed. The wound was drained, sewed with silkworm-gut, and dressed antiseptically, after which a Gooch's splint was applied. The patient recovered with firm union.

CASE V.—Clara L., aged twenty-eight years, owing to a long-standing tubercular disease, had ankylosis of the knee-joint in the flexed position. Excision was performed, the limb was straightened and dressed. As in the last case, firm union took place, and a useful limb resulted.

CASE VI. *Tubercular arthritis of knee, treated with injections of iodoform and glycerin.*—J. M., aged twenty-nine years, had some trouble in the knee-joint when nine years of age. Four years ago the same joint again became affected and afterward was never free from pain, which was always increased by use. The part became swollen, and for six months before admission the trouble had steadily grown worse. There was, however, no displacement, the range of motion was good, and the case was thought to be a favorable one upon which to try the effect of injections of iodoform. The joint was opened by small lateral incisions, and about one-half an ounce of flaky serum was evacuated. The joint cavity was irrigated with 3 per cent. boric acid solution, a 10 per cent. emulsion of iodoform in glycerin was injected, and the wounds were closed by suture. The reaction was marked, the entire limb becoming cedematous. Lead-water and laudanum were applied and the foot elevated; by the sixth day the oedema had disappeared. These injections were repeated at intervals of four days for two weeks, a half-ounce of the iodoform mixture being used each time. They occasioned but little pain and were followed by slight inflammatory reaction. The patient left the hospital much improved, promising to report at a later period, but has failed to do so.

CASE VII. *Tubercular inflammation of the wrist-joint treated with injections of iodoform and glycerin.*—J. B., aged twenty-one years. Fifteen months before applying for treatment he received a blow on the right wrist. There was slight swelling at the time, which disappeared under treatment. The swelling about the joint invariably followed upon its excessive use. Fifteen weeks ago he was compelled to quit work on account of the increased swelling and pain. A fusiform, doughy swelling surrounded the joint from the lower fourth of the arm to the metacarpo phalangeal articulation. When this swelling was palpated, roughened and movable bones could plainly be felt.

The hand was slightly flexed at the wrist, the fingers were extended, withered, and absolutely stiff. (Fig. 3.) The case seemed about as unfavorable as it well could be, but as amputation of the right hand in a young man is such a grave proceeding it was determined to make the apparently hopeless effort to save the part.

FIG. 3.



Tubercular arthritis of wrist-joint.

The ulnar aspect of the joint was accordingly punctured with a fine aspirating needle and two and a half ounces of typical tubercular pus were with-

FIGS. 4 AND 5.



Effect of treatment by iodoform injections.

drawn. A 10 per cent. emulsion of iodoform in glycerin (5ij) was then injected into the abscess cavity. Considerable inflammatory reaction followed

the injection, but this gradually subsided. The injections were repeated at intervals of about a week for two and a half months, from one to three drachms of the emulsion being driven each time into all parts of the tubercular infiltrate. The abscess cavity became obliterated after the third injection; at about the same time pain disappeared, the swelling steadily subsided, the fingers became more movable, until in a few months the patient had a useful, painless hand, showing a scarcely perceptible enlargement about the wrist-joint. Under date of November 15, 1892, he writes that he can lift a pail of water with that hand and has no pain. The accompanying cuts, from photographs, represent the appearance of the part at this time. (Figs. 4 and 5.)

This result is particularly striking, since the wrist case was so advanced that no surgical operation other than amputation could even be considered. In the neck case (p. 42), treated by the same method, the infiltration was so extensive that thorough removal by the knife was out of the question. The knee case would ordinarily have been subjected to at least an arthrectomy. The treatment bade fair to render any operation needless, but, unfortunately, the patient has not recently been heard from. This treatment in joint cases is being tested by König, Bruns, Billroth, Krause, and the majority of the leading German surgeons. The curative effects appear to us to be due partly to the germicidal influence of the iodoform, partly to its stimulating action on the healthy tissues surrounding tubercular foci (see p. 44). In the above cases improvement was noted after the first few injections. No symptoms of iodoform intoxication were noted, and unless ether is used as a solvent there seems little danger from these parenchymatous injections.¹

ANEURISM.

Five patients have applied for treatment on account of aneurisms. Three of these have been of the popliteal artery, one was a left femoral varicose aneurism, and the fifth a diffuse traumatic aneurism at the middle of the arm. Two of the cases of popliteal aneurism were cured by compression; in one this failed.

CASE I. *Popliteal aneurism.*—Mr. B., aged twenty-five years, was sent by his physician, Dr. Alison, on account of a pulsating tumor about the size of a goose-egg in the right popliteal space. Digital pressure was applied for forty-two hours; this resulted in considerable reduction in the size of the aneurism as well as in its pulsation. Careful palpation, however, demonstrated that a small quantity of blood was still passing through the sac. Rapid cure by Esmarch's bandage was then attempted, the elastic roller being firmly applied above and below the aneurism and carried over the

¹ During the last year, Dr. White has had a successful result in a case of obstinately recurring tubercular caries of the trochanteric region, which had resisted three extensive operations, by the free use of a 25 per cent. emulsion of iodoform in boro-glyceride. This was injected into sinuses and retained by packing. The patient has for the first time in three years a firm, healthy cicatrix, already six months old, and has no symptoms of bone trouble. The case is not included in the above series, as she was not treated in the hospital.

latter with very light pressure. After two hours' trial of this method the compression was suspended, and the patient allowed to rest for a few days, when the femoral artery was ligated at the apex of Scarpa's triangle. The after-treatment consisted in elevating the limb on a pillow and enveloping it in cotton. The wound healed by first intention, and the patient recovered without incident. The circulation in the limb remained fair throughout. This was probably largely assisted by the preliminary digital compression. This was a most unfavorable case, owing to the poor constitution of the patient, who was the subject of advanced mitral heart disease, and was also a confirmed rheumatic. He had a small aneurism of the left axillary artery, which did not tend to increase in size, and was therefore not treated, but simply kept under observation. For these reasons it was feared that ligation of the artery might lead to the development of another aneurism at the seat of ligation, but this has not occurred.

CASE II.—H. L., aged forty-two years; colored; had acute articular rheumatism and smallpox in 1862; had engaged to excess in athletic exercises. In the spring of 1891 pain and a sensation of weakness in the right popliteal space were first noticed. In the following fall he detected a pulsating swelling. In January, 1892, he came to the hospital. The treatment consisted of rest in bed, with the limb flexed and elevated on a pillow. Iodide of potassium and aconite were administered internally, and digital pressure of the femoral was continued for fifty-four hours, after which moderate pressure was kept up by a horseshoe tourniquet for ten hours; a roller bandage was then placed in the bend of the knee, and the limb flexed, bandaged, and retained in the flexed position. During the treatment the aneurismal sac gradually diminished in size; pulsation entirely ceased, and did not return. The patient was allowed to get out of bed at the expiration of a month, and he left the hospital entirely cured.

CASE III. *Popliteal aneurism*.—T. G., male, aged thirty-two years, presented an aneurism of moderate size in the popliteal space, which was treated as in the preceding case, with the same result.

CASE IV. *Left femoral varicose aneurism*.—Mr. K., aged twenty-nine years, came for treatment on account of a large pulsating tumor just below Poupart's ligament, the result of an old gunshot wound. The swelling presented the typical symptoms of a varicose aneurism. Ligation of the iliac was advised. This being positively refused, pressure by means of shot-bags was applied for four weeks. Partial consolidation of the aneurism apparently resulted, but later rupture occurred, with enormous extravasation into the tissues of the thigh. In consequence, amputation just below the trochanter was necessitated in spite of the patient's unfavorable condition. The patient suffered from an extreme degree of shock, both before and after operation. Death occurred in seventy-nine hours, without reaction having occurred. The external iliac vein and artery were enormously dilated; the vein was as large as the small intestine, the artery three times its normal calibre; the walls were exceedingly thin, and rupture of the vein had taken place about the level of Poupart's ligament. The channel of communication between the two vessels was scarcely large enough to thrust a lead-pencil through.

CASE V. *Diffuse traumatic aneurism*.—W. S., aged fifty-three years, received a shot from a 32-calibre revolver eleven years ago, the ball entering the arm anteriorly at the junction of the middle and lower thirds, passing out posteriorly. He bled freely. A wound of the brachial artery was diagnosed; hemorrhage was checked by packing. After cicatrization, a hard mass about two inches in circumference remained. This became painful when he did any hard work. During the four or five weeks previous to admission the tumor became very sensitive, the surrounding tissues were inflamed, and severe lancinating pains shot through the hand and forearm. Suddenly the tumor began to enlarge, and was found to be pulsating. The patient was brought at once to the hospital, and was found to be suffering from a diffuse traumatic aneurism. The entire arm was enormously swollen (Fig. 6), the pulse at the wrist was lost, and the hand was cold. *Operation*: An Esmarch

bandage and tube were applied and a free incision was made in the line of the brachial artery. All the tissues were infiltrated with clotted blood and

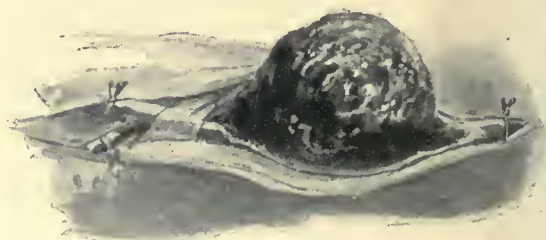
FIG. 6.



Diffuse traumatic aneurism of the brachial artery.

matted by inflammatory exudate. The sac was freely opened (Fig. 7), and all the clots were turned out. The ruptured artery was found and traced up to a point where its walls were healthy, and there tied with catgut. The distal

FIG. 7.



Traumatic aneurism laid open and vessels tied.

vessels were more difficult to find, but were finally secured. The wound was drained and closed. The arm was put on an anterior splint and elevated. The radial pulse appeared on the second day. Healing by granulation followed, and the patient recovered without the slightest impairment of function.

“Murray’s treatment”—that is, encouraging the rapid formation of a red clot by firmly applying an Esmarch bandage below the aneurism, carrying it lightly over the distended sac, then occasioning further engorgement and blood stasis by taking four turns of the Esmarch above the aneurism—was not successful in the single case in which it was applied. Against digital pressure the objection has been raised that it so contuses the parts that should a subsequent ligation be necessary, the risks of operation are greatly increased. Our experience has not corroborated this theoretical objection, which is more than counterbalanced by the establishment of collateral circulation, which digital pressure favors. Ligation above and below, with excision of the sac, is the method preferred in this service in cases of traumatic aneurism, whether diffused or circumscribed.

EXCISION OF THE ELBOW.

Eight excisions of the elbow have been performed. The posterior straight incision was employed. Whenever possible the periosteum was carefully dissected from the bones. The brachial artery at the bend of the elbow, and the ulnar nerve as it passes in the groove between the olecranon and the internal condyle, are the important structures to be avoided. The attachments of the brachialis anticus and biceps in front, and of the triceps and anconeus behind, were spared as far as possible. The wounds have always been drained through and through. Anterior angular splints were used.

Particular attention was paid to the after-treatment. At each dressing gentle passive motion was made, and until the wound healed splints with different angles were applied when the dressing was changed. When gentle passive motion occasioned much pain, or did not seem to result in sufficient freedom of flexion and extension, ether was given to the full stage of anæsthesia and moderate force was employed. In some cases this was repeated twice a week for months at a time. In the arthritic cases the nutrition of the wasted muscles was restored by faradism and massage repeated daily, splints were discarded after the seventh day, and patients were encouraged to use the arm.

CASE I. *Luxation and necrosis*.—T. H., aged twenty-nine years, injured the elbow-joint by falling three months previously. This injury was diagnosed as a fracture, and the arm dressed in plaster-of-Paris. In a short time this was substituted by a felt splint, and passive motion was begun. As the arm remained swollen, without motion at the elbow, and with neither motion nor sensation of the fingers, he was brought to the hospital. A large collection of pus about the joint was evacuated, the radius and ulna were found displaced posteriorly, and the head of the radius and condyles of the humerus were necrosed. Excision of the joint was performed. The patient recovered with moderate motion in the joint and a return of motion and sensation in the fingers.

CASE II. *Old fracture; vicious union*.—Willie W., aged nine years; eleven weeks before admission, fell and sustained an injury in the neighborhood of the elbow-joint. An anterior obtuse-angle splint was applied. After recovery the joint was found to be immovable; for the relief of this condition he was brought to the hospital. On examination the internal condyle was found to be absent from its normal position, and in front of the joint there was felt a hard, bony mass, which was thought to be the displaced condyle, increased in size by the formation of callus, and mechanically interfering with the movements of the joint. An incision being made, the diagnosis was found to have been correct. The joint itself was normal. The obstruction was removed. Rapid healing occurred, and a joint functionally perfect resulted.

CASE III. *Septic arthritis*.—Theresa H., aged twenty two years, following an abortion, was seized with acute inflammation of the elbow-joint. This was treated by rest, ichthyol ointment, and later by blisters. Improvement was very slow, and the patient passed from observation. She returned later, however, free from the symptoms of inflammation of the joint, but with such firm ankylosis in the position of full extension that excision was necessitated. Healing was prompt. A considerable range of motion was preserved in the joint, which she was able to use for all domestic work.

CASE IV. *Tubercular arthritis*.—Boy, aged three years, suffering from tuber-

cular joint disease, with profuse suppuration. There was much wasting. On incision, the joint was found disorganized, and the ends of the bones carious. Resection was performed and the wound drained. The patient made a good recovery, with a functionally satisfactory joint.

CASE V. *Suppurating tubercular joint*.—Male, aged forty-six years, partially ankylosed in the extended position. Excision was performed. The functional result was satisfactory.

CASE VI. *Tubercular arthritis*.—S. R., male, aged forty years. An abscess was evacuated, and the joint explored. Caries of the coronoid process, and of the internal condyle was found. These diseased portions were removed. The patient recovered with a useful joint.

CASE VII. *Necrosis*.—E. B., male, aged four and a half years, was subjected to excision of the elbow, on account of necrosis of this joint following injury. The patient made a satisfactory recovery, with a fair range of motion.

CASE VIII. *Tubercular arthritis*.—Female, aged three years. Tubercular arthritis, with extensive involvement of the soft parts. Excision was performed; a functionally useful joint resulted.

LUPUS OF FACE; CURE BY TUBERCULIN.

Mr. J. W., of Titusville, aged fifty-nine years in 1890, had been under treatment for two and a half years for an ulcer of the face, occupying the left cheek, the parotid region, and the side of the neck, and measuring on an average about four inches in diameter. (Fig. 8.) It began on the side of

FIG. 8.



Lupus of face and neck.

the face in front of the upper portion of the ear, as a small scab, which steadily extended, and under which ulceration developed.

The diagnosis by the various surgeons whom he had consulted, and who treated him, had been epithelioma. He had been in the hands of four men of experience, some of them of excellent position in the profession. He had had eight cutting operations performed, besides numerous plasters and other local applications.

At the time he came under my care I was using the newly-discovered

Koch's lymph, now known as *tuberculin*, or *paratoloid*. He remained in Philadelphia three weeks, during which time he received in the lumbar region six injections of this material, beginning with 0.1 milligramme, and increasing in strength up to 0.5 milligramme each. A distinct local reaction (at the side of the sore) occurred after each injection, diminishing in intensity with the later ones; no local treatment was employed. At the end of the three weeks healing had so far progressed that it was thought proper to let him go home, and ten days later the ulcer was entirely healed. He now, twenty-three months later, presents a sound and permanent scar. There has never been the slightest solution of continuity since that time. The illustration (Fig. 9) shows the extent and position of the cicatrix.

FIG. 9.



Effect of treatment by injections of tuberculin (Koch's lymph).

This case is of more than usual interest on account of the length of time which has now elapsed since cicatrization occurred. As yet but few permanent cures by the use of paratoloid have been reported. Cheyne, by a system of continuous and increasing dosage, has obtained rapid healing in a number of cases, which remained in good condition for some weeks. In this patient the previous failure of a number of operative procedures, and a great variety of local applications, and the prompt, satisfactory, and apparently permanent healing which followed the use of tuberculin, all local treatment being withdrawn, strongly emphasize the unique properties of that remedy. It would seem that even if success from its use is only occasional, it may occur in such desperate and otherwise hopeless cases that it is worth more frequent trial than the profession, in the reaction from its too extravagant anticipations, is now giving it.

DELAYED UNION AND UNUNITED FRACTURES.

Cases of delayed union and ununited fracture in this service are treated according to their duration, in the following manner: Recent cases, by reapplication of dressings insuring perfect immobilization; older cases, by frictions or by encouraging the functional use of the limb, aiding it by means of apparatus; still older cases, by resection of the ends of the fragments and fixation by splints, or, if the position favors it, by pins. The use of wire has been abandoned as altogether unsatisfactory. When large portions of bone have been removed, and very long continuance, or extensive disease, or unfavorable position of the fracture, demand both absolute fixation and stimulation of condensed and atrophied bone, the plate figured on page 54, and used in cases V. and VII., has been found invaluable. Hennequin¹ has recently published a series of unsuccessful cases of osteotomy and wiring for ununited fracture, and is inclined to attribute his failures to some constitutional condition interfering with repair. They certainly illustrate the need for some more thorough and satisfactory method of fixation than the wire suture. This we believe will be found in the use of this plate in appropriate cases.

CASE I.—Man; fractured clavicle six weeks old, treated by Velpeau bandage. There was no bony union. The man was put to bed, in the supine position, on a hard mattress, and with a very small pillow for the head. At the end of a month the bone was firmly united.

CASE II.—Boy, aged eleven years; fracture of the upper third of the femur. Treatment: extension and sandbags. Distinct motion was found at the end of six weeks; moderate friction was made, and the dressings reapplied. Four weeks later there was no improvement. The boy was then etherized, and the fragments vigorously rubbed together. The same dressings were reapplied. Six weeks later firm union was found to have occurred.

CASE III.—W. S., male; fracture of the tibia two months before coming under observation. Union had not occurred, although friction had been practised. The bone was in good position, and it was therefore thought best to get the patient about. A brace was ordered, and the patient was allowed to walk. At the end of six weeks the bone had united perfectly.

These three cases illustrate as many methods of treating delayed union. In the first, perfect rest was followed by healing. In the second case vigorous friction, followed by immobilization, was necessary. In the third case, the continued irritation produced by walking was necessary to effect a cure.

CASE IV.—A railroad employé applied for treatment on account of an ununited fracture of the left ulna, at the junction of the middle and upper thirds. The condition was of some months' standing; the usual milder measures had been unsuccessfully employed before coming to the hospital. Crepitus and motion at the seat of the fracture were very apparent. An incision was made over the seat of injury, and after the soft parts had been dissected away, an S-shaped fracture was found. The dense fibrous tissue and lymph between the ends of the bone were removed with a small chisel

¹ Revue de Chirurgie, August, 1892.

without altering the line of fracture. The two ends of the bone were then drilled, and held together by a single screw. The wound was dressed antiseptically, an anterior splint applied, and the arm suspended in a sling. At the end of a month the screw was removed, when firm union was found to have occurred. The tract left after the removal of the screw closed by granulation in about a week, and the patient was dismissed well.

CASE V.—Miss J., nineteen years of age, received a compound fracture of the humerus, about two inches below the acromion, the result of a fall eighteen months before coming to the hospital. At the time of the accident an internal angular splint was applied. The bone made no attempt at union; the ends were therefore rubbed together and the splint reapplied, but without success. The attending physician then cut down on the seat of fracture and curetted the ends of the bone, and the arm was again fixed with a splint. Union still did not occur. She then consulted a surgeon, who drilled and wired the fragments. The bone not only failed to unite, but an infected sinus remained open. She then came to the University Hospital. The seat of injury was cut down upon, and by means of the chisel and saw, an oblique section of each bone was made and the freshened surfaces placed in apposition, and secured by a long screw. The sections of bone were eburnated and non-vascular, and promised but feeble reparative efforts. The screw became loose in about three weeks, and was removed. At the end of six weeks the wound had completely healed, but the bone had not united. After an interval of some weeks another attempt was made to restore the patient a useful arm. An incision was made in the line of the old cicatrix; transverse sections of the bone were made until the cut surface appeared healthy. After accurately fitting the ends together two holes were bored in each fragment of bone corresponding to the holes in a metal plate prepared to retain the fragments. Screws were then passed through the plate into the bone, thus holding the fragments in close and fixed apposition. The arm was dressed to the side and kept immobile for seven weeks, when the patient was again etherized for the purpose of removing the plate. Ten days later the external wound was firmly healed, and a careful examination showed that the bone had united firmly.

CASE VI.—Mr. J. presented the characteristic deformity of a Pott's fracture, which had occurred nine months previously, which had become exaggerated by attempts at walking. Examination showed the internal malleolus to be absent from its normal position, and a prominence was felt in front of the astragalus. Crepitus and preternatural mobility were detected in the fibula about three inches above the external malleolus. An incision was made along the inner border of the tibia and extended to the tuberosity of the scaphoid. The displaced internal condyle was chiselled loose, and the surface freshened for it in its normal position, where it was wired. An incision was made over the seat of fracture in the fibula, and after considerable dissection and the free use of the chisel, the fragments were restored to their proper position. Drainage-tubes were inserted, the wounds were dressed antiseptically, and the foot was placed in a fracture-box. At the end of six weeks the patient was allowed to go about with a plaster-of-Paris dressing on the foot. The result was highly satisfactory; all deformity had disappeared, the patient walked with ease with a cane, and a considerable degree of motion returned in the ankle.

CASE VII.—Mrs. R., aged forty-two years, was brought to the hospital by Dr. Downs, of Dover, Del., on account of an ununited fracture of the humerus. Eight years ago the patient first experienced an aching pain in the right arm; this steadily grew worse. The elbow-joint became somewhat stiff, and was at times swollen as were also the hand and forearm. There was marked loss of power, and the hand could not be carried to the head. Examination during this period failed to show any cause for her suffering, and the trouble was considered to be rheumatic. The patient had had attacks of pain over the left chest, which were attributed to rheumatism. Otherwise her health

had always been good. Some of her mother's family were consumptive, and one maternal aunt died of cancer of the breast.

Without any apparent change in her condition, the right humerus broke at the junction of the upper and middle thirds, in August last, while the patient was in the act of raising her nine-months old baby to her shoulder. A posterior splint was applied with an anterior trough. As this failed to fix the fragments, a plaster cast was applied. It was found necessary to change this every week as it became loose. After wearing the cast six weeks continuously the fracture had failed to unite and the patient was sent to Dr. White. Crepitus was distinct on motion, and there was no callus thrown out about the ends of the bone. The pain in the arm was relieved in part after the fracture had occurred.

When exposed by incision the seat of fracture was found to be enveloped in a mass of partially organized tissue strongly suggesting sarcoma; on carrying the knife through this down to the bone, there escaped several drachms of thick liquid containing fibrinous shreds, much like the contents of a cold abscess. There was absolutely no attempt at repair. The ends of the bone were irregular, jagged, and partly absorbed. They were resected, exposing beyond the area of partial absorption dense eburnation. Additional cross-sections were removed till the bone appeared fairly healthy and distinctly vascular. In all, an inch and a quarter of the shaft of the humerus was resected.

After securing good apposition of the two freshened bone-ends, the plate shown in Fig. 10 was put in position. (Fig. 11.) Four holes were drilled.

FIG. 10.

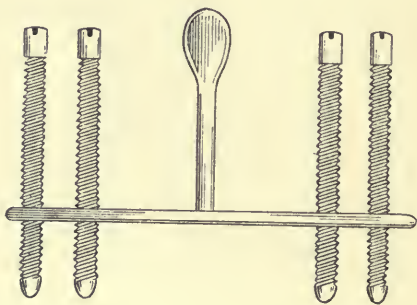


Plate for fixation of ununited fracture after resection.

FIG 11.

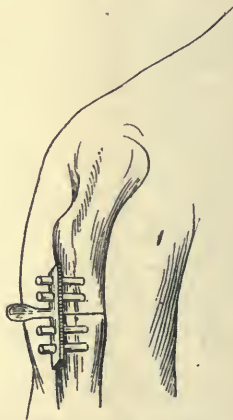


Diagram of plate in position: Case VII. (Cf. Case V.)

This plate held the bone so firmly that on raising the arm by the elbow the humerus moved as a whole, exactly as though there was no fracture. The wound was packed with iodoform gauze and a pasteboard moulded splint embracing the shoulder, arm, elbow, and forearm was so applied that without removing the splint the dressings could be changed.

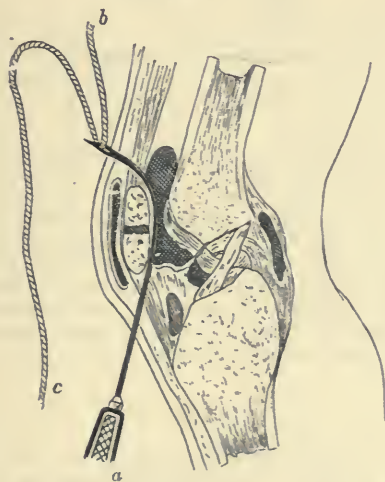
The wound remained sterile for many days, then there was some suppuration. The patient has felt no motion in the arm, none has been detected during the occasional changes of the splint, and the pain from which she suffered for eight years is entirely relieved. It is too soon yet to decide whether there will be bony union or not.

FRACTURE OF PATELLA.

In this relation two cases of fracture of the patella may be described, which were both subjected to operative interference:

CASE I. *Barker's method*.—A man, aged twenty-three years, broke his patella by making a misstep in alighting from a train. He was seen the next day. The joint was distended with blood and the fragments were widely separated. Barker's operation, the most recent operative procedure in this fracture, was performed as follows: The lower fragment of the patella was steadied by the finger and thumb, and a narrow-bladed knife thrust into the joint, edge upward, in the middle line of the ligamentum patellæ at its attachment to the lower fragment. Through the wound thus made a stout-handled pedicle needle was thrust into the joint behind the lower fragment, and pushed up behind the upper fragment and through the quadriceps tendon in the middle line as close to the border of the bone as possible, the upper fragment at this time being forced down and steadied. When the point of the needle became apparent beneath the skin the latter was drawn upward and an incision made upon the needle, the eye of which was then threaded with sterilized silk or wire (Fig. 12) and the needle withdrawn, carrying the thread

FIG. 12.

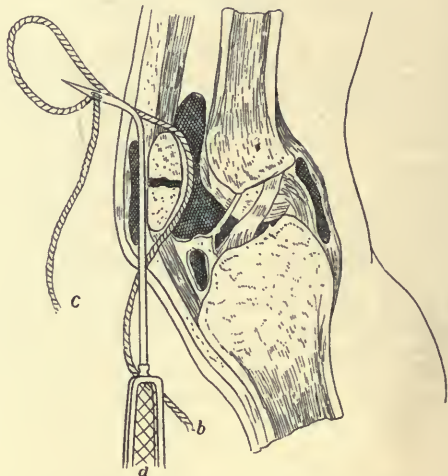


Barker's operation for transverse fracture of the patella. First stage. *a*. Needle. *b*. End of ligature to be threaded and conducted behind fragments. *c* Free end of ligature to be brought in front of fragments.

behind the fragments. The needle was next unthreaded and passed through the same skin wound below and out of the upper wound, but this time in front of and close to both fragments. Here it was threaded with the upper end of the suture (Fig. 13) and withdrawn. The two fragments were then brought together, friction was made to displace clots or other foreign material, and the ligature tied tightly over the lower border of the patella. The two ends of the ligature were cut short and the wound closed. Union of the skin wounds was by first intention. Passive motion was begun on the tenth day. The patient was out of bed on the thirteenth day, walking without much difficulty. He left the hospital at the end of three weeks with a very useful

knee. The range of motion and general usefulness are now (November 19), ten months after the injury, as good as on the other side.

FIG. 13.



Barker's operation for transverse fracture of the patella. Second stage. *a.* Needle. *b.* Inner portion of ligature in position. *c.* Opposite end of ligature threaded and ready for withdrawal, leaving it in front of the fragments.

CASE II. *Stimson's method.*—This patient was also a young man in whom the fracture was the result of muscular action. He was seen the day of the accident. A strong silk suture was carried, by means of a perineal needle, through the ligamentum patellæ, up by the side of the patella, then through the quadriceps tendon, and down to make its final exit at the point of beginning. It was then drawn tight and knotted, while the fragments were approximated. The ends were cut short, and it was left as a buried suture. At the end of three weeks there was still slight motion between the fragments. At five weeks the patient was discharged, with very close fibrous union, and with excellent use of the limb.

HEAD INJURIES.

All depressed fractures, whether simple or compound, or whether brain symptoms were present or absent, were elevated. This treatment is in accordance with the practice of the great majority of modern surgeons; and in view of the number of cases not thus treated, who suffer from various forms of cerebral irritation or disease, it seems unfortunate that it was not the rule of practice long ago. The operation in itself is almost free from risk. Some of the simpler cases were closed without drainage; the compound comminuted fractures were drained by silk or a small tube.

Trephining.—Of eight cases, six recovered and two died. The two fatal cases succumbed soon after admission from the violence of the injuries. In one instance there was extensive fracture at the base with

laceration of the brain. In the other case there was much laceration of brain tissue at the seat of fracture. The patient died without reacting.

One patient was trephined for *traumatic epilepsy*. A flap was raised which included the scar of an old injury, and a button of bone was removed. The bone section showed eburnation. The opening was enlarged with the rongeur until the skull presented a healthy appearance. A mass of greatly thickened dura was removed. Union by first intention was obtained. The patient had no more fits while in the hospital. A recent note from his physician, Dr. I. N. Leyda, of Allegheny, Pa., states that for six months after returning to his home he remained absolutely well. Later light attacks recurred, which gradually became more frequent, and his intellect failed. He died recently from rupture of a cerebral artery.

In four cases of *epilepsy* following blows upon the head, the scar resulting from the injury was excised. Primary union followed in all cases, and all remained free from convulsions during their stay in the hospital, and for various periods subsequently. These cases, added to those I have previously reported,¹ make twenty-four cases of supposed traumatic epilepsy, all of which were at least temporarily benefited by operation.

Trephining for old depressed fracture, with delusions of persecution.—S. S., aged fifty-seven years, sent by Dr. Allport, of Phillipsburg, Pa., received a head injury twenty years before coming under observation. Two years before admission it was noticed that his memory was beginning to fail, he became irritable, and was the victim of delusions of persecution. He was rational on most affairs, but had delusions of persecution. Examination of the head showed a depressed scar on the right side, in front of the parietal eminence, and two inches from the median line. The bone was found to be deficient, and the pulsations of the brain could be felt through the scalp. A flap was raised in the usual manner. As it was being dissected from the edges of the opening in the skull a cyst was exposed, about the size of a pigeon's egg, which was encroaching upon the brain substance. The cyst was opened and drained. Its wall was thin, and through it could be plainly seen the brain convolutions beneath. Following the operation there was marked improvement. The delusions entirely left him, and he was able to pursue his business for upward of eight months, when in an altercation he received a heavy blow upon the head. Shortly after, his delusions recurred. He was then readmitted to the hospital, and again operated upon on November 9, 1892. The cyst was found to be obliterated, its site being occupied by a dense fibrous mass, a quarter to three-eighths of an inch in thickness, consisting undoubtedly of the collapsed cyst walls, and constituting practically a thickened scar of brain tissue. This was dissected out, together with some healthy brain structure on either side. The wound healed in five days by first intention. The immediate effects of the operation are most striking. The patient, who for the week previous had required constant watching and restraint, and was gloomy when he was not violent, became at once rational, cheerful, and docile, and so remains. It is too much to hope, however, that this will be permanent.

Persistent headache.—Florence C., aged twelve years, received a scalp wound at the age of eight years. This suppurated for a long time. A year later she began to suffer from severe headache. For three years this was constant and increasing in severity, so that she had to be taken from school. The scar was excised and a button of bone was removed. The operation afforded

¹ Annals of Surgery, August and September, 1891.

immediate relief, the pain has not recurred, and the child has attended school regularly.

Compound comminuted fracture over the superior longitudinal sinus.—M. S., aged thirty years. The bone was driven into the brain to the depth of an inch. On elevating it there was furious hemorrhage, the sinus having been torn completely across. The hemorrhage was checked by iodoform packing, and the patient made an uninterrupted recovery, returning to his work in six weeks.

(To be continued.)

THE CHOLERA OF 1892 IN NEW YORK: ITS PROPHYLAXIS AND TREATMENT.

BY REYNOLD W. WILCOX, M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

THE record of the cholera in New York Harbor during the present year will be handed down as a memorable one. The lessons which it teaches are important; it is to be hoped that they will not be received in inattentive ears. The prophylaxis of cholera demands attention to certain details; had these been observed there would not have been any cholera in New York Harbor. The present Health Officer had been in office but four days, after his appointment last spring, when typhus fever broke out in the city of New York, being brought in by the *Massilia*, a steamer passed by his predecessor after inspection by his (predecessor's) deputy. This experience was sufficient to put the entire *personnel* of the office to their best efforts that a similar misfortune should not again befall the largest *entrepôt* of the Western continent. Systematic disinfection of the baggage of immigrants from the Continent and Russia, and later of that from Poland, was begun. At the first report of cholera, knowing full well its predilection for beaten routes of travel, the steamship companies were requested to disinfect baggage and to make special medical inspections at the point of embarkation. On August 19th, on information that the disease was suspiciously near the German frontier, the Department of State was requested to make inquiries through consuls to ascertain if cholera existed in Germany. On the 23d, having received reports from Bremen, Hamburg, and Stettin, the two latter being unsatisfactory, the Hamburg-American Steamship Company was notified by the Health Officer to use great caution, to disinfect baggage and clothing, and detain passengers at Hamburg for five days. How far these orders were carried out was ascertained on the arrival of the *Moravia* on the 30th, when it was learned that the immigrants had embarked immediately upon the arrival of the train, and that there had been twenty-two deaths among twenty-four patients, the first case occurring on the first day after leaving Hamburg. It is evident that cholera

gained its entrance into New York Harbor solely by the negligence of the steamship company. The disease can be stamped out on shipboard in five days by competent medical officers, and should be done at sea. Under the direction of the Health Officer it was done in every case after the steamships came under his jurisdiction in New York Harbor. The sick and dead were removed. The immigrants received baths, having been previously rubbed with a bountiful supply of green soap. A sail, suspended by the four corners, the water being constantly renewed, was an excellent, though an improvised bath-tub. The crew's quarters and the steerage were scrubbed and washed out with a 1 : 500 solution of corrosive sublimate. The fumigation with sulphur was carried out. The baggage and clothing were disinfected by sulphur, superheated steam, and, when injury would not be done, by corrosive sublimate solution. Soiled bedding and clothing were wrapped in sheets wetted in corrosive sublimate solution and burned in the furnaces. Lastly, fresh water was supplied and only used after boiling. Proper regard for the lives of passengers demands that this work shall be done at sea. It only requires competent medical officers to carry it out.

The observation station is Hoffman Island. Although much of the plant bears evidence of niggardly legislation and ancient notions of disinfection, on the whole it is in good condition and suitable for the purposes for which it is designed. The island accommodates about eight hundred persons, in eight divisions. There is no soil upon the island, asphalt covering the entire space, thus affording opportunity for thorough flushing with disinfectants. A high fence prevents forbidden ingress or egress, and even the passage of contagious material into the sea. The *latrines* are provided with pans containing disinfectants, so that untreated *dejecta* cannot have access to the sea. There are ample arrangements for the disinfection of clothing and effects by superheated steam, or by exposure to burning sulphur for six hours, being loosely unfolded in bins; and for the use of bichloride solutions upon trunks, bags, boots, etc. All improvements which have been recommended by the different advisory boards before this epidemic have been in the main and essential part carried out. The work done at Hoffman Island is shown by the following table:

Steamer.	Quarantined.	Discharged.	Number of passengers.	Pieces of clothing and effects disinfected by		
				Sulphur.	Superheated steam.	Corrosive sublimate.
Normannia . . .	Sept. 4	Sept. 19	566	850	2800	1850
Rugla	Sept. 9	Sept. 19	419	520	1850	1360
Scandia	Sept. 19	Sept. 28	938	1800	3500	1200
Bohemia	Sept. 30	Oct. 8	605	1150	2200	1560

On admission to the island all were bathed ; the total number of baths was 2634. There were 111 cases of illness and 2 deaths. Fifty cases were transferred to Swinburne Island for treatment, including about thirty cases of measles from the Scandia.

The thoroughness of the work done on board the vessels and at Hoffman Island is shown by the result—the absolute prevention of the entrance of cholera into the United States. The imposition of the twenty-day limit by President Harrison, on September 1st, had nothing to do with the result, although it somewhat lightened the labors of the Health Officer by its practical restriction of immigration. The magnitude of the work at the Quarantine Station in New York Harbor is shown by the following table:

Inspections at Quarantine, August 31 to October 14, 1892.

Crews	34,612
First cabin	17,330
Second cabin	13,054
Steerage	15,081
Total	80,077

When it is borne in mind that no case of this disease escaped the vigilance of Quarantine, the care, skill, and systematic thoroughness are apparent and should receive due acknowledgment.

The problem presented by the *Normannia* was a peculiar one. There had been deaths in both the first and second cabins during the voyage. It was impossible to definitely ascertain the cause of these deaths ; besides, there were in the steerage American citizens entitled to the same protection as that afforded to the cabin passengers. No advisory board, nor quarantine commission, nor legislature had contemplated the necessity of keeping cabin passengers under observation. Unfortunately legislatures are not in session when epidemics are imminent. On September 8th a case of cholera was found in the person of a member of the crew, which necessitated the isolation and disinfection of the kitchen force. The difficulty of procuring vessels to remove the passengers was almost insurmountable, but the timely generosity of a private citizen solved the problem. The prompt acquisition of Fire Island secured a site, hitherto unneeded, suitable and ample for all requirements. The prompt action of Governor Flower in meeting this emergency was no less notable than his decision in calling upon the military forces in the interest of law, order, and humanity, to disperse the howling mob of Southside barbarians who sought to defy his authority. The prophylaxis was efficient, yet simple and thoroughly carried out.

Whether we can ever rely upon internal hygiene, as does Great

Britain, is an open question. We have no cholera-breeding dependency against which we dare not quarantine; nor, indeed, do we believe the British idea to be practicable for this country. Commerce must be as little interfered with as is possible, for this means commercial loss. Marine detention is alone effective, and for this islands or vessels are necessary. Every land *cordon sanitaire* has been broken through even when instituted under the most favorable circumstances. On the other hand, when one considers that nearly six thousand vessels from foreign ports, besides several thousand engaged in coastwise commerce, are inspected each year at the port of New York, the impossibility of finding safe and suitable anchorage during their detention is obvious. Besides, it is a fundamental tenet of maritime law that an infected vessel shall have its passengers and crew removed at the earliest possible moment. Whether the work of prophylaxis can be better accomplished under National supervision is, at the present time, largely discussed. New York, to day, with few and insignificant exceptions, has nothing but praise for the brilliant success of the present conduct of affairs. Every argument for National supervision applies equally well to the present *régime*, and we believe that the centralization of authority would in this case, as in other instances, result in a less efficient *personnel* and a less direct responsibility than exists at present. The interests of the city of New York are greater than of all the rest of the country. These interests demand and will secure competent and skilful officers, faithfully and fearlessly conducting, in the light of the latest and best scientific knowledge, the affairs of Quarantine. The plant is established, is sufficient for present necessities, and can be increased to meet the demands of the future. Past experience has taught the officers the necessity of keeping watch of the epidemics in foreign lands, and the information possessed by the Health Officers of the port of New York in the past, as it was in the present instance, has been very accurate and of earlier date than that possessed by the Department of State at Washington. If argument were needed, the brilliant success attained this year should be a conclusive one.

At Swinburne Island there are ten wards, accommodating about three hundred persons. The buildings are old, but in good repair and well adapted to all requirements. The treatment here carried out was essentially surgical in bearing, especially in the stage of asphyxia. In the premonitory diarrhoea, if there was no collapse, the first step was to clear the bowels, which was done by the administration of ten grains of calomel by the mouth, and this was repeated every hour until three doses were taken, or thorough evacuation secured. Afterward, one half grain was administered every two hours. Stimulants were used as required, preferably brandy, and generally administered hypodermatically. In the stage of asphyxia the stomach and bowels were thoroughly washed

out. For the stomach the Faucher tube was used for the purpose of introducing the 1 : 1000 solution of hydrochloric acid. The procedure was repeated every two hours. The intestines were washed out with a two per cent. aqueous solution of tannic acid, half a gallon being used at a time, at a temperature of 108.9° F., and repeated every two hours. A long (two feet) rectal tube was employed, the patient lying upon the back, and gentle massage was indicated if there was any difficulty in the passage of the fluid beyond the ileo-cæcal valve. The purpose of this procedure was—(1) to wash out the intestines; (2) to precipitate the ptomaines; (3) to warm the body. After each injection the bodily temperature rose from one to three degrees F.

When the pulse began to disappear and respiration became shallow, then hypodermoclysis was resorted to. The solution employed was sodium chloride, 3 parts; brandy, 10 parts, to 1000 parts of sterilized water kept at a temperature of 104° F. One quart was used for an adult, and it was injected into the flanks at about the eighth rib, and was repeated every second to fifth hour, according to the necessities of the case. The largest amount used in any one case was eleven quarts. In several cases inhalations of oxygen at the rate of a gallon every hour, watching the heart, were resorted to. No nourishment was administered while vomiting persisted. At other times peptonized beef, champagne, and milk with carbonated water—three parts of the former to one of the latter—were employed. The distressing cramps were avoided in all but two cases by placing the patients in a warm atmosphere, in their beds, near the steam-radiators, and building a tent over them, so that they would be in a current of hot air. During convalescence a simple and nourishing diet was insisted upon. The work done at Swinburne Island can be summed up as follows: Fifty-six suspected cases were received, all of which, ten being excepted, presented marked premonitory symptoms. All cases entered at the Island received a hot bath on admission, and were kept in bed. All suspicious cases drank freely of hydrochloric acid lemonade, of the strength of 1 : 1000. Seventy-two cases of Asiatic cholera were treated, eight of them being light cases. Of these cases twenty died, six of them within two hours after admission. Of these twenty deaths three can be attributed to other causes, because they had recovered from the stage of asphyxia; two of these died from pneumonia of the right lower lobe, one died from nephritis. So that but seventeen deaths are justly attributable to the cholera—dying in the period of asphyxia. The duration of convalescence was about fourteen days. It is especially notable that opium had no place in the treatment, the laboratory experiments of Koch showing conclusively that the administration of this drug favors the development and progress of the disease. The virulence of the epidemic of 1892 was shown by the fact that a large number of cases became fatal within four hours after admis-

sion, thus rendering the time of efficient service a brief one. The bodies of all persons dying from cholera were cremated, as well as those of twenty-four persons who died upon the steamships while in New York Harbor.

The writer would express his appreciation of the courtesies extended to him by the Hon. Charles F. Allen, State Commissioner of Quarantine; William T. Jenkins, M.D., Health Officer, and his personal staff; and by J. M. Byron, M.D., Physician at Swinburne Island, in their placing at his disposal every opportunity afforded by the service to facilitate the study of this subject.

HISTORY OF THE RECENT OUTBREAK OF EPIDEMIC CHOLERA IN NEW YORK.

BY HERMANN M. BIGGS, M.D.,

PROFESSOR OF MATERIA MEDICA, THERAPEUTICS, AND CLINICAL MEDICINE, BELLEVUE HOSPITAL MEDICAL COLLEGE; CHIEF INSPECTOR, DIVISION OF PATHOLOGY, BACTERIOLOGY, AND DISINFECTION, NEW YORK CITY HEALTH DEPARTMENT.

THE *Moravia*, the first vessel infected with cholera to arrive in New York, reached Quarantine on August 31st, having sailed from Hamburg on August 16th. She reported twenty-two deaths during the voyage from gastro-intestinal disorders. The official cholera statistics of Hamburg now show that cholera was recognized as existing there on August 11th. On September 3d, three days after the arrival of the *Moravia*, the *Normannia* and the *Rugia* reached New York. Each of these vessels reported a number of deaths at sea from cholera, and on their arrival in New York there were four cases of cholera (so called) on the *Normannia* and five cases on the *Rugia*.

In addition to these three vessels, later came the *Scandia*, *Heligoland*, and *Bohemia*, all from Hamburg, which, on their arrival, reported deaths at sea from gastro-intestinal diseases. These six vessels were detained at the lower quarantine station. The *Wyoming*, from Liverpool, arrived with apparently a clean bill of health, but before her discharge from quarantine, while she was lying at the upper quarantine station, several cases of cholera appeared among her passengers, and she was sent back to join the cholera fleet in the lower bay.

One case occurred on the *State of Nevada*, from Glasgow, after she had been cleared at quarantine and while she was lying at her dock. Whether this case was infected in the city or on board the vessel is not known. There had been no suspicious cases on board during the voyage. The vessel, however, was ordered back to quarantine for disinfection.

I am indebted to Dr. J. M. Byron for the following table, showing the ports of departure and dates of arrival in New York of the infected

vessels, the number of cases and deaths occurring at sea and after arrival in New York, and also some other data. Dr. Byron was placed by the Health Officer in charge of Swinburne Island and of the ships at Lower Quarantine during the epidemic.

SYNOPSIS OF SICKNESS AND DEATHS ON BOARD THE CHOLERA FLEET.

(From the time of departure of the infected ships from European ports until the last case of Asiatic cholera was disposed of in Lower Quarantine, New York Bay.)

SHIPS.	Port of departure.	Date of arrival in New York.	Transferred to Swinburne Island.				Deaths.						Crenated at Swinburne.
			With asphyctic cholera.	With light cholera.	Suspects. ¹	Total	At sea, cholera ?	Swinburne Island.		Other places in port.		Total.	
								Cholera.	Other cause.	Cholera.	Other cause.		
Moravia* . . .	Hamburg	Aug. 31	...	...	...	...	22	...	...	1	2	25	3
Normannia* . .	Hamburg	Sept. 3	12	6	18	36	5	6	...	6	1	18	13
Rugia*	Hamburg	Sept. 3	23	...	19	42	4	8	...	4	...	16	16
Wyoming*. . .	Liverpool	.....	1	...	4	5	...	1	1	2	2	6	6
Scandia* . . .	Hamburg	Sept. 9	11	2	13	26	32	1	2	7	2	44	12
Heligoland (tank)	Hamburg	.....	...	...	...	...	2	...	...	...	...	2	...
Bohemia* . . .	Hamburg	Sept 15	17	...	2	19	11	4	1	4	1	21	10
			64	8	56	128	76	20 ²	4	24	8	132	60

All ships marked * had emigrants on board (steerage passengers). The total number of sick on board during the voyage could not be ascertained, as the existence of cholera on board was ignored by the surgeons of some vessels. It should be stated, however, that most of those who were taken sick during the voyage presented gastro-intestinal symptoms and died.

The person first affected with cholera in New York was taken ill the evening of September 5th, five days after the disease appeared in the harbor, and died September 7th. During the four weeks following, six other cases occurred in New York, and one case in New Brunswick, N. J., in which the cholera spirillum was found. In three cases, where no biological examination was made, the associations and clinical history justified a diagnosis of Asiatic cholera, thus making a total of eleven cases recognized as Asiatic cholera.

The history of the cases in which there was no doubt as to the diagnosis is, briefly, as follows:

¹ All persons taken to Swinburne Island, excepting ten, had severe gastro-intestinal symptoms.

² It should be observed that out of this number four patients died within two hours after admission to the hospital, and three from complications following cholera. The last case of cholera died October 5, 1892.

CASE I.—The first case in New York recognized as Asiatic cholera was taken ill on September 5th. It was that of a laborer, C. McA., single, aged thirty-two years, plasterer's helper by occupation, and lived in a tenement boarding-house on the West side, where he had been for many months. September 5th he worked as usual, returning home about 5.30, apparently well, and ate a hearty supper. During the night he suffered from diarrhœa, but went to work the following morning. About 12 o'clock he returned home, complaining of cramps and diarrhœa, without vomiting. During the afternoon he vomited once, but the diarrhœa ceased. He, however, complained constantly of very severe cramps in the abdomen and limbs. During the night he died, and a diagnosis of Asiatic cholera was made by the attending physicians, Drs. Deshon and Robertson, and the case was so reported to the Health Department. No history could be obtained of any similar illness in the house or neighborhood, and no contact could be found with any new arrivals from abroad. The autopsy was made late in the afternoon of October 7th, and showed the same post-mortem appearances and anatomical lesions as were found in the following cases; but as these were not considered entirely distinctive of Asiatic cholera, and as there was no history of contact with cases of cholera, or possible exposure to cholera infection, and as the microscopical examination of the intestinal contents was negative, a diagnosis of death from cholera morbus was returned by Dr. Dunham and the writer. However, a biological examination as a matter of routine was immediately begun, and on the evening of the 10th the cultures had progressed so far and had become so characteristic in appearance, that it was considered almost certain that the case was epidemic or Asiatic cholera. That there might be no error, however, it was not officially reported upon until several days later, after the character of the organisms found had been confirmed by other observers.

CASE II.—The second case was in the person of a butcher who was taken ill September 3d, with vomiting and diarrhœa. A day or two later he improved somewhat, went into the country for a visit, and growing worse, returned to the city September 6th. Diarrhœa persisted, and he died on the morning of September 10th.

CASE III., the wife of Case II., was taken ill the night of September 10th, with profuse watery diarrhœa and vomiting, severe cramps in the abdomen and legs, and the physician who saw her on the morning of the 11th found her in a state of collapse. She died in the afternoon of September 11th at 6 o'clock, about twenty hours after the beginning of her illness.

The physicians in attendance regarded these cases as suspicious, and so reported them to the Health Department. The patients had been residents of New York for more than thirty years, and had lived in the apartment occupied by them at the time of death for fifteen years. The husband was an employé in a tripe factory. There was no history of exposure in any possible way to cholera or to persons who had been in Europe. Nor was there anything that could be ascertained that was in the least suspicious or the least suggestive as to the manner of infection. The autopsies in these cases were not satisfactory, as the bodies had been partially embalmed, and cultures could not therefore be obtained from the intestinal contents. Fortunately, however, some of the intestinal discharges from the woman, passed during life, had been collected and sent for examination, and in these the cholera spirillum was found. No examination was made of the intestinal contents of the man.

CASE IV.—The next case was an infant, aged twenty months—child of a German laborer employed as a sweeper in a large slaughter-house. On the evening of Saturday, September 10th, at 8 o'clock, after a day of apparently perfect health, the child suddenly became ill, with profuse watery diarrhœa and vomiting. A physician was immediately called, but death ensued at 4 A.M. on September 11th, eight hours after the beginning of the illness. The anatomical lesions found at the autopsy were the same as those found in the other cases. This family lived in a tenement on the East side, far removed from any possible contact with previous cases. Two weeks previous to the illness the family was visited by two girls who had just arrived from Antwerp by the steamer Friesland. They brought with them a quantity of baggage, part of which was opened in the house, where they remained for two days. So far as could be learned, there had been no suspicious cases on the steamer, nor had these girls shown any signs of illness.

CASE V.—The day after the death of the child the father was taken ill, and suffered for a number of days with severe diarrhœa, from which he recovered. A biological examination of the intestinal contents of the child disclosed the presence of the cholera spirillum, but the intestinal discharges of the father were not examined.

CASE VI.—On September 5th, a man, a butcher by occupation, after a day spent in drinking freely of lager beer and whiskey, was taken ill at 6 P.M., with a profuse watery diarrhœa, attended with little pain. The following morning, September 6th, he vomited frequently, but went to his work, returning home at 2 P.M. From September 6th to the night of September 9th he suffered constantly from profuse watery discharges from the bowels and stomach, accompanied by severe cramps in the abdomen and limbs. There was extreme prostration. On September 10th he was much improved, and on the 11th was well, but weak.

CASE VII.—On September 12th, the wife of the preceding case was seized at 7 P.M. with profuse watery diarrhœa and vomiting, followed by severe cramps in the abdomen and limbs. These symptoms continued during the night and the following morning, until death occurred at 1 P.M., after an illness of eighteen hours. She had been in constant attendance on her husband during his illness in the preceding week. No examination of the intestinal discharges of the husband was made, as the case was not reported to the Health Department as suspicious. After the death of the wife, the case was reported as probably Asiatic cholera. The anatomical lesions found at the autopsy were the same as those found in the other cases, and the biological examination of the intestinal contents showed the presence of the cholera spirillum. There was nothing in the history of these cases or in their associations that was suggestive in the slightest degree of the source of infection.

CASE VIII.—After an interval of nearly a week, in which no cases occurred, on September 18th, at 7 P.M., a suspicious case was reported as having occurred on board the Allan Line steamer State of Nevada, lying at the foot of West Twenty-first Street. The State of Nevada sailed from Glasgow on September 3, 1892, was cleared at Quarantine September 17th with 55 emigrants, 107 second class and 115 first class passengers on board. There had been no cases of suspicious illness during the voyage and no deaths. After the vessel reached her dock on September 17th, a fireman went ashore about 7 P.M., returned at 9 P.M., and at 4.30 A.M. the following morning, September 18th, was taken ill

with diarrhœa, slight vomiting, and cramps in the abdomen and limbs. He was attended by the ship's surgeon. Between 8 and 12 A.M. he had four large watery movements, and then the diarrhœa and vomiting ceased. He went into collapse, however, and died at 7.30 P.M. At the post-mortem examination, in addition to the lesions which were found in the other cases, there was a dilated heart, with fatty degeneration in the heart muscle and an adherent pericardium. A biological examination of the intestinal contents revealed the presence of the cholera spirillum.

CASE IX.—The same day (September 18th) a case was reported from New Brunswick, New Jersey, in which the patient was the captain of a canal boat, at the time lying off the foot of Thirtieth Street. This case was seen by Dr. Cyrus Edson at the request of the health authorities of New Brunswick, and some clothing soiled by the discharges was obtained for examination. The biological examination of this also revealed the presence of the spirillum of Asiatic cholera. It was not possible to determine definitely from the history whether the disease had been contracted in New York or outside, and as the death occurred in New Brunswick, it was not included in the cases occurring in New York City.

CASE X.—The same day (September 18th) a German, a coachman by occupation, resident in the United States seven years, but who had only returned to the city from Bay Shore, Long Island, on September 8th, was reported as ill with suspicious symptoms of cholera. It was said that he had been suffering from diarrhœa for several days, but had not been confined to his bed until the morning of the 18th. He had not been attended by a physician, and the case was reported to the Health Department by other occupants of the premises. A medical inspector found him suffering from diarrhœa, vomiting, cramps and pains in the abdomen, and severe prostration. He was immediately removed to the Reception Hospital, where he was treated until his death, on September 23d, at 6 A.M. During this time he had constant and profuse "rice-water" diarrhœa and vomiting, and severe cramps in the abdomen and legs. The temperature, which was subnormal before death, appeared to rise after death and the body remained warm for an unusual length of time. A post-mortem examination showed the same lesions as had been found in previous cases. The cholera spirillum was found in the intestinal discharges during life and in the intestinal contents after death. There was nothing in the history or associations of this man which were at all suggestive as to the manner of infection. This was the only case seen early enough to be removed before death, and caused the Health Department greater anxiety, perhaps, than any other single case, because it occurred in a large boarding-house of the poorer order, with 100 or 150 inmates.

CASE XI.—The next case was reported on September 29th. A German, marketman by occupation, was suddenly taken ill at 6 P.M. on September 28th, with watery diarrhœa, first brown-colored, and later of a rice-water character. There were severe cramps in the legs, but no pain in the abdomen, and but little vomiting. He died in a state of collapse on September 29th, at 2.30 A.M. At the autopsy the same lesions were found as were present in the other cases. There was nothing suggestive in the history or associations of this case as to the source of infection.

TABLE SHOWING DATA REGARDING THE CASES OF EPIDEMIC CHOLERA WHICH OCCURRED IN NEW YORK IN 1892.

No.	Date of illness.	Reported to Health Department.	Died	Sex.	Occupation	Remarks.
1	Sept. 5	Sept. 6	Sept. 7	M.	Laborer	
2	" 3 or 6	" 10	" 10	M.	Laborer in tripe factory	
3	" 10	" 11	" 11	F.	.....	Wife of Case No. 2.
4	" 10	" 11	" 11	F.	Infant	Child of Case No. 5.
5	" 12	.....	.....	M.	Laborer in slaughter-house	Recovered. Not examined biologically.
6	" 6	.....	.....	M.	Butcher	Recovered. Not examined biologically.
7	" 12	Sept. 13	Sept. 13	F.	.....	Wife of Case No. 6.
8	" 18	" 18	" 18	M.	Fireman	"State of Nevada."
9	" 17	" 18	" 18	M.	Boatman	Died in New Brunswick.
10	" 18	" 19	" 23	M.	Coachman	Died in Reception Hospital.
11	" 28	" 29	" 29	M.	Marketman	

Dr. J. H. Huddleston, under the direction of Dr. Charles H. Roberts, Chief Inspector for Contagious Diseases, New York City Health Department, and the writer, made a very careful search in all the cases for the source of infection, but entirely without satisfactory results. Search was made in every case possible along the following lines:

a. Had any of the family been in Europe during the past six months, or did any of them know a person who had been there in that time?

b. Had any person or goods of unknown antecedents come to the house after July of this year?

(The answers to *a* and *b* were, with one exception—Case IV.—in the negative.)

c. What "calling acquaintances" had the family? Were these, as far as known, free from illness and from connection with infection?

d. Where did the members of the family take their meals? If not at home, did any suspicion attach to the place?

e. From what dealers were the food supplies for the house obtained? Where did those dealers buy their goods? (No investigation was made of water or milk supply.)

f. What occupations had the various members of the family?

g. If the occupation brought the person in contact with many others, were the latter, as far as known, healthy?

h. Could the work bring the person in contact with material which might be infected? If so, where did the material come from?

i. What were the habits of the family as to excesses, and as to cleanliness?

j. What theory of origin of the illness was held by the family?

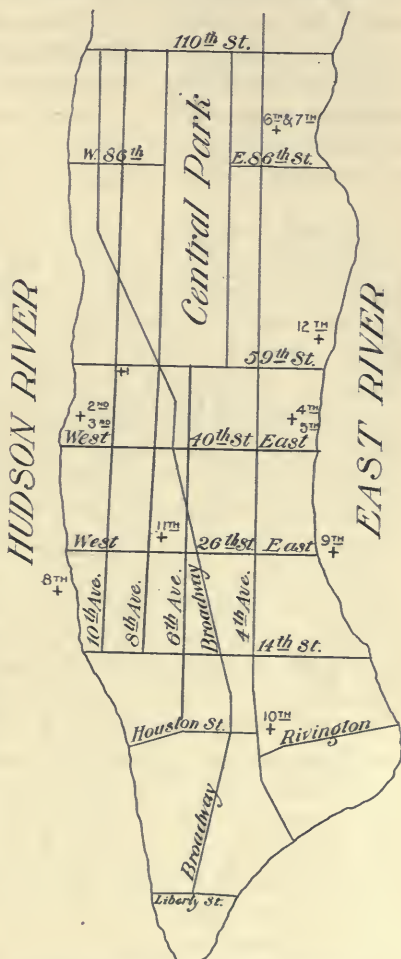
(Some referred the illness to a specified excess in eating or drinking; more had no theory. The majority insisted that the disease was not cholera.)

The quarantine of the houses enforced by the Board of Health had, in most cases, put the occupants in bad humor, and they were therefore not inclined to submit to a prolonged examination. In some cases answers known to be false were given, and in others some answers were probably false.

Such constant reference was made in the answers to food trades, and through them to a few slaughter-houses, that special inquiry was made at those places to learn whether the health of all the employes was satisfactory, and whether any were recently arrived immigrants, or had been in contact with such; but the health was reported good, and no clew was obtained.

A review was also made of the precautions taken against infection from the vessels under quarantine, with only the result of showing that the guards were probably sufficient.

An outline map of the city of New York is added, upon which are plotted the points at which the cases in this outbreak occurred, in order that an idea may be gained of the complete absence of topographical association.



Outline map of New York, showing topographical distribution of the cases of epidemic cholera.

Points marked + show where cases of cholera occurred, the numbers indicating the order of occurrence.

Case VIII.—Captain from canal boat, East 30th Street, died in New Brunswick.

Case IX.—Fireman on "State of Nevada," lying at foot of West 21st Street.

The high mortality in the recognized cases in the city and the lack of any association render two suppositions probable:

a. That a number of mild cases of epidemic cholera occurred in which the nature of the disease was not recognized.

b. That the cholera infection was in some way rather widely disseminated in the city.

APPEARANCES AND ANATOMICAL LESIONS FOUND POST-MORTEM.

Practically the same appearances and lesions were found after death in all the cases, nine in number, and these were so striking and characteristic, and are so unusual in autopsies in New York, that in the latter cases they seemed to the writer, in themselves, to be almost sufficient to justify a diagnosis of Asiatic cholera. The eyes and cheeks were deeply sunken, the face drawn, the extremities of the nose, ears, fingers, and toes shrunken and often cyanosed; the arms and legs were usually half-flexed, the hands clinched, and the toes drawn downward. Rigor mortis was very marked. On opening the abdomen the intestines presented a peculiar rosy blush, especially marked in the coils of the ileum. The small intestine was distended with slightly pink-colored contents resembling in appearance and consistence a thin broth. The mucous membrane of the stomach and of the small and large intestine was rather pale, and seemed but little changed excepting for the unusual prominence of the Peyer's patches and the solitary follicles in the ileum. The blood was completely fluid, or at most contained only a few soft, dark-colored clots, and seemed unusually thick and dark-colored. The lungs and all the parenchymatous organs appeared congested, and there seemed to be cloudy swelling in the heart muscle, liver, and kidneys. The spleen was rather smaller than normal, and the bladder empty. The brain and its meninges appeared congested. In a few cases the intestinal contents were not large in amount, but in all cases there was a striking absence in the intestinal contents of any biliary coloring matter or anything having the appearance of ordinary feces.

The appearance of the exterior of the body, the muscular contractions and cyanosis of the extremities, the rosy hue of the intestinal coils, the character and color of the intestinal contents, the appearance of the blood, and the absence of any anatomical lesions sufficient to cause death, form together a group of phenomena which seem almost characteristic of Asiatic cholera. However, it is probably impossible to say with certainty that cases presenting these appearances and anatomical findings are certainly Asiatic cholera, for, rarely, cases of so-called cholera morbus in the adult may present almost identical appearances and lesions.

The original biological examinations in all the cases were made by Dr.

Edward K. Dunham, of the Carnegie Laboratory. Before the official announcement of the cause of death in the first case, however, at my request, Dr. T. Mitchell Prudden examined the cultures and confirmed the diagnosis, and in several of the subsequent cases, before their announcement, the cultures were also examined by Dr. Prudden and Dr. H. P. Loomis. The identity of the organism found in these cases with the cholera spirillum has since been confirmed by several other well-known bacteriologists in this country, and by Dr. Petri, of the Imperial Board of Health of Germany.

It would hardly seem necessary to say anything regarding the importance of biological examinations to determine the cause of death in Asiatic cholera, were it not for some unfavorable criticisms that were made in regard to such examinations at the time, or that have been made since the outbreak. It would seem as if an argument to establish the necessity of such examinations in the beginning of an outbreak of Asiatic cholera was on a par with an argument to show the importance of the examination of the sputum in assisting the diagnosis of doubtful cases of pulmonary tuberculosis. So far as I am aware, in the absence of an epidemic or proof of infection, all physicians of experience are agreed that it is impossible to make, with certainty, a clinical diagnosis of Asiatic cholera, and it is also admitted that the first cases in an epidemic are always doubtful cases. I greatly question whether credence would or should be given to the statement of any physician or any number of physicians in asserting, upon the clinical history alone, that any given isolated case, occurring in the absence of any proof of infection of epidemic cholera, was a case of that disease.

The testimony of all the German observers in the recent epidemic in Germany has been that in many cases epidemic cholera occurs in such a mild form that no suspicion as to the nature of the disease would be aroused were it not for the biological examination; and, on the other hand, cases of cholera nostras are sometimes seen which present a perfectly typical clinical picture of epidemic cholera. Experience in these cases in New York, and in the cases which occurred at the quarantine station in 1887, convinces the writer of the enormous practical value of biological examinations for the diagnosis of Asiatic cholera, and it is certain that such examinations made by Dr. Prudden and the writer were alone the cause of the exclusion of epidemic cholera from New York in 1887, and that they were of the greatest importance in assisting the work of the Health Department in the outbreak this year.

In reviewing the history of this outbreak in New York, one is impressed by several interesting features:

First. In no single instance, after the most careful and conscientious inquiry and investigation, was it possible to find any satisfactory way of accounting for the infection.

Second. The cases occurred in widely separated parts of the city, and in no instance was there the slightest suspicion of association.

Third. After the cases were brought to the attention of the Health Department, in no instance did a secondary case occur.

Fourth. There was a striking association in the occupation of the persons affected with the food trades, and especially animal foods.

Fifth. Although some twenty-six suspicious cases were examined, in every one in which the cholera spirillum was found, eight in number, death occurred, while in only one of the other cases, in which the cholera spirillum was not found, did death follow. In two instances, however, where recovery took place—that is, the fifth and sixth cases—although biological examinations were not made, the associations with cases which were proven to be cholera Asiatica justified the assumption that these were of the same nature.

THE BACTERIOLOGICAL EXAMINATION OF THE RECENT CASES OF EPIDEMIC CHOLERA IN THE CITY OF NEW YORK.

BY EDWARD K. DUNHAM, PH.B., M.D.,

PROFESSOR OF HISTOLOGY, BACTERIOLOGY, AND HYGIENE, BELLEVUE HOSPITAL MEDICAL
COLLEGE; DIRECTOR OF THE CARNEGIE LABORATORY.

THE materials submitted for bacteriological examination differed considerably in character. As most of the suspected cases died after a very short illness, material could first be collected only at the autopsy. Some of the intestinal contents, and in one case some of the contents of the stomach, were collected in vessels for transmission to the laboratory, or the ileum was tied at two points a short distance apart and then cut beyond the ligatures so that there might be the least possible alteration of the contents before its actual examination. In two cases fluid dejecta were obtained from suspected cases during life and sent to the laboratory in stoppered bottles. In still other cases the only available material before the death of the individual was clothing soiled by dejecta.

The method of examination necessarily differed according to the nature of the material received for examination. Where this material was fluid it was examined directly under the microscope, without previous staining, and again after drying and dyeing with aniline colors.

These direct microscopical examinations of the intestinal contents proved very unsatisfactory. In only one case did cover-glass preparations of the dejecta show large numbers of comma bacilli agreeing in form and size with the cholera bacillus. This case was where dejecta

had been collected from a patient some time before death and examined within a very few hours. Plate cultures from the same material showed that the cholera bacillus made up 98 per cent. of those bacteria present which were capable of developing in ordinary nutrient gelatin at the temperature of the room.

In all the other cases microscopical examination revealed an abundance of columnar epithelium from the intestinal mucous membrane; numerous straight, thick bacilli; a considerable amount of granular detritus; but at most only a few curved bacilli, which could not warrant even a presumption for or against the probability of a diagnosis of epidemic cholera. Plate cultures from this same material revealed the presence of the cholera bacillus in proportions varying from about 20 per cent. to as high as 90 per cent. of the total bacteria developing upon the plates. This observation shows the importance of not relying upon a simple microscopical examination of dejecta or intestinal contents. An analogy is presented by the untypical forms found in old bouillon and gelatin cultures of the cholera bacillus.

The cultures made for the purpose of identifying the cholera bacillus were invariably prepared by inoculation from typical colonies upon plate cultures. These plate cultures were made, where possible, directly from the fresh dejecta, or from material taken from the intestine or stomach at the autopsy. Where this was impossible, the material sent for examination (soiled clothing, etc.) was introduced into bouillon in test-tubes, and the latter placed in an incubator at 36° C. (96.8° F.) for six, eight, or twelve hours, until the bouillon was cloudy. From these impure bouillon cultures the initial plate cultures were then made, and the colonies developing on these plates used to inoculate other media for the purpose of identification.

In order not to miss the cholera bacillus, should it be present in small proportion, even where dejecta or intestinal contents were received, this preliminary bouillon cultivation was made in the hope that in this way material for plate cultures, more favorable than the original material, might be obtained. This safeguard against possible failure to detect the cholera bacillus in the original material proved unnecessary in all the cases examined. The first set of plates from the original dejecta always yielded positive results, there being no difficulty in detecting the colonies of cholera bacilli. A previous cultivation in bouillon at the body temperature appeared, however, to increase somewhat the relative abundance of the cholera colonies upon the plates. In the cases where the material to be examined was very small in amount and dried upon clothing, a preliminary cultivation in bouillon proved very satisfactory.

The bacteria associated with the cholera bacillus were chiefly bacterium coli commune or proteus vulgaris, so that there was no difficulty in distinguishing those presumably cholera from those which were certainly

not cholera. But the appearances of the cholera colony varied so much on plates which developed at different temperatures, and with the size of the diaphragm used when they were examined under the microscope, that it seems excusable to dwell a little upon these variations, since the recognition of the cholera colony is the first step in the bacteriological diagnosis of a case.

The classical descriptions of the cholera colony refer to colonies which have developed at a temperature of from 60° to 65° F. Under these conditions the colony appears circular, coarsely granular, with a peculiar high refraction, giving an appearance as though the colony were made up of broken bits of glass or beads of various sizes grouped together. It is colorless, or sometimes has a very faint pinkish tinge when examined with some lenses, but not, as far as I have observed, when examined with apochromatic objectives. Around the colony, after it has reached a considerable size (thirty-six to forty-eight hours), there is a narrow zone, in which the gelatin is softened and its surface depressed. This causes a refraction of the light, so that the colony appears surrounded by a shadow when a moderately small diaphragm is used.¹

This description of the colony applies only to colonies more than twenty-four hours old. Very young colonies appear as minute, fine granular, colorless spots; nearly circular, but with a slightly irregular edge.

Colonies which have developed at a higher temperature, approaching the point at which the gelatin begins to soften (from 70° to 73° F.), show considerable modifications attributable to the more rapid liquefaction of the gelatin. Instead of forming a compact mass surrounded by only a narrow zone of softening, the growth appears more or less scattered through a circular area of liquefaction. There is a central, more compact mass, resembling the colony grown at a lower temperature; but its edge is ragged, and in the liquid surrounding it there are small, irregular portions of the growth which appear to have been detached from the central mass, and to float about freely in the liquid. The edge of the liquefaction, when a very small diaphragm is used, shows a narrow border of growth, with very fine short radiations resembling the milled edge of a coin, but never extending appreciably into the solid gelatin.

The appearances described are illustrated in Figs. 1 to 4.

As soon as the colonies upon the plate cultures had grown enough to develop their characteristic appearances, material from them was used

¹ The Abbé condenser with iris diaphragm was used when the plates were examined, and the size of the diaphragm varied to bring out the structure of the colonies. The smallest aperture was about one millimetre.

to inoculate tubes containing about two cubic centimetres of a sterile solution of 1 per cent. peptone and $\frac{1}{2}$ per cent. table salt in distilled water. These peptone cultures were then placed in the incubator at about 36° C. (96.8° F.) for six hours. They were then examined in hanging-drop preparations to determine the form, arrangement; and motility of the individual bacteria. In all of the cases these hanging drops showed curved bacilli, either isolated or in S-shaped pairs, and possessed of a very active motility. The growth was sufficiently abundant to render the liquid distinctly cloudy, and to occasion a whirling appearance in the cloudiness when the tube was shaken. These tubes were then used to obtain the "indol reaction" by pouring a few drops of concentrated, "strictly pure" sulphuric acid down the inner surface of the tube, so that a layer of the strong acid was formed below the cultures. Within a few moments the peptone solution acquired a distinct rose tint, sometimes tending toward lilac. In such young cultures the color was often faint, but in all cases it was unmistakable. The peptone used was Witte's "peptonum siccum."

These observations required from thirty-six to forty-eight hours from the time the material was received, and if all the data furnished by them agreed with the known characteristics of the cholera bacillus, a positive report was considered as justified. These data were: 1. The size, form, and arrangement of the individual bacilli. 2. Their motility. 3. The appearance of colonies upon plate cultures. 4. The comparatively slow liquefaction of 10 per cent. slightly alkaline nutrient gelatin. 5. The rapid development in peptone solution at the body temperature. 6. An early and distinct development of a positive response to the "indol test."

Fortunately, in all the cases examined, the variations in the above characteristics fell within the limits of variation previously well recognized in studies of fresh, pure cultures of the cholera bacillus grown at various temperatures. There was, therefore, no ground for hesitation in arriving at a diagnosis.¹

As confirmatory tests, cultures in gelatin tubes, on agar-agar, and on potato were also made.

The gelatin-tube cultures show variations in development perfectly analogous to those observed in the colonies upon plate cultures, and due

¹ In further confirmation of my identification of the cholera bacillus in cultures from the recent cases in New York, I have received communications from Dr. Harold C. Ernst, of Harvard University Medical School, and from Dr. Petri, of the Imperial Board of Health in Berlin, stating that the cultures which I had the pleasure of sending them from the first case (McAvoy), and which they very kindly studied, were, in their opinion, characteristic of cholera. Dr. Petri further stated that after comparing my culture with recent cultures from cases in Hamburg and in Berlin for two weeks, he could detect *no difference* between them. I wish here to express my thanks to these gentlemen for their kindness in this matter.

also to differences of temperature. These variations are of degree rather than of kind, and are illustrated in the accompanying photographs.

Not only do the appearances of cultures differ where the development has taken place under different conditions, but the appearances of the individual bacilli vary somewhat according to the medium and the temperature. Under some circumstances the bacilli appear short and but slightly curved. In other cases they are longer, appear more slender, and show a much more marked curvature. These observations are illustrated by the photographs. Fig. 10 was taken of a contact cover-glass preparation made from a plate culture after development for forty hours at a rather high temperature (between 65° and 70° F.). Fig. 11 is a photograph of a cover-glass preparation made from a culture in peptone solution. Fig. 12 is a photograph from a cover-glass preparation made by contact from a plate culture grown at a low temperature. It is very exceptional to find spirilla in colonies developed upon gelatin plates. In bouillon cultures of cholera from the first case (McAvoy), spirilla of twenty-five turns were observed.

The following is a brief summary of the results obtained in the individual cases which yielded positive results:

Sample 1 [Case I.; McAvoy].—Intestinal contents obtained from the ileum more than twenty-four hours after death. Cholera bacilli found in the proportion of about 30 per cent. of all the bacteria growing upon plate cultures.

Sample 2 [Case IV.].—Dejecta. Cholera bacilli found in great abundance. Percentage not determined.

Sample 3 [Case III.].—Dejecta. Examination within a few hours of collection. 98 per cent. cholera bacilli.

Sample 4 [Case VII.].—Intestinal contents received in a portion of colon tied at both ends, more than twenty-four hours after death. Cholera bacilli abundant. No record of percentage.

Sample 5 [Case IX.].—Two samples: 1. Rag soiled with dejecta. 2. Cotton wad soaked in a mixture of dejecta and vomitus which had been very largely diluted with water by the family of the patient. Cholera found in abundance in both samples. Percentage estimation impossible. Large quantities of proteus vulgaris contaminated the plate cultures.

Sample 6 [Case VIII.].—Intestinal contents. Cholera bacilli in great abundance. No record of percentage.

Sample 7 [Case X.].—Dejecta on clothing and on wad of absorbent cotton. Cholera bacilli in great abundance. Percentage determination impossible.

Sample 8 [Case XI.].—Dejecta examined four hours after their collection. 32 per cent. cholera. Intestinal contents examined within twelve hours after death. 88 per cent. cholera.

Sample 9.—Intestinal contents examined about twenty-four hours after death. 85 per cent. cholera. The gastric contents contained 70 per cent. of cholera.

In every case the examination was made in duplicate; in most of the cases in triplicate or quadruplicate.

FIG. 1.

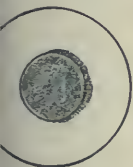


FIG. 2.

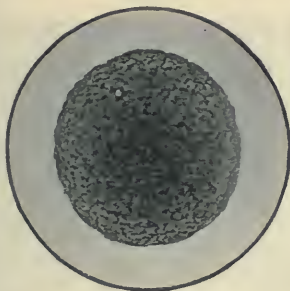


FIG. 3.

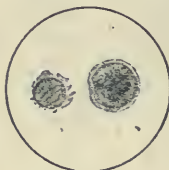


FIG. 4.

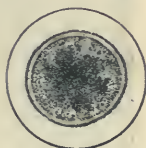


FIG. 5.

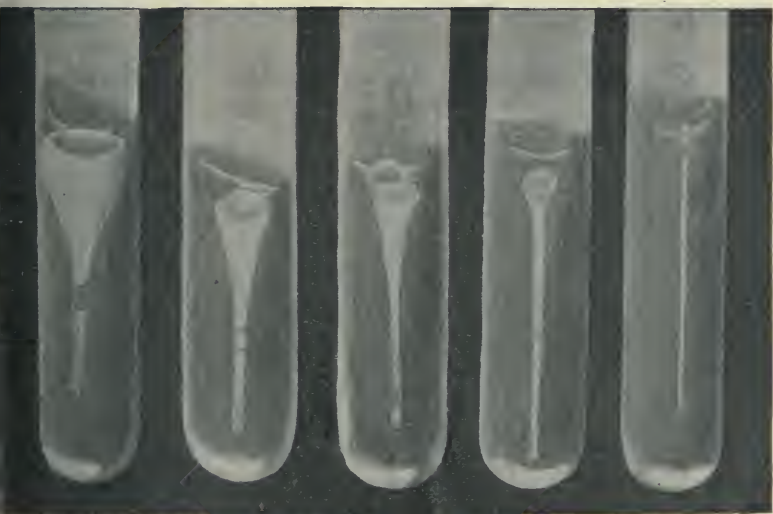


FIG. 6.

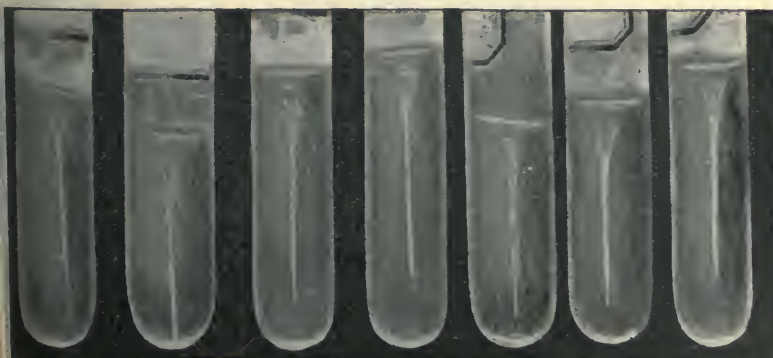


FIG. 7.

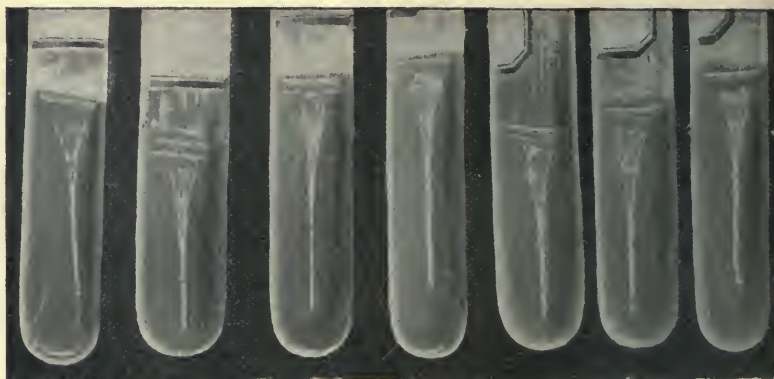


FIG. 8.



FIG. 9.

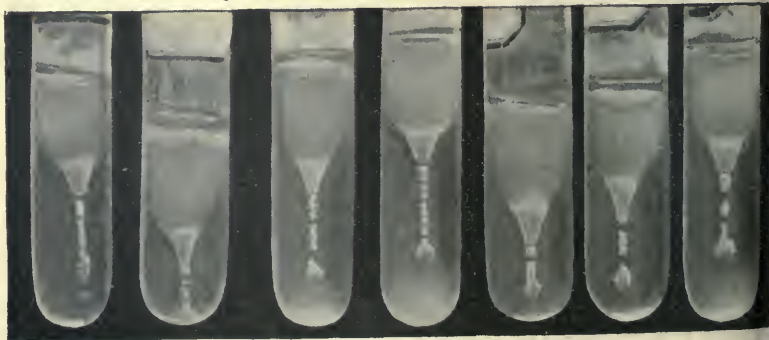


FIG. 10.

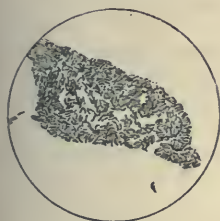


FIG. 11.

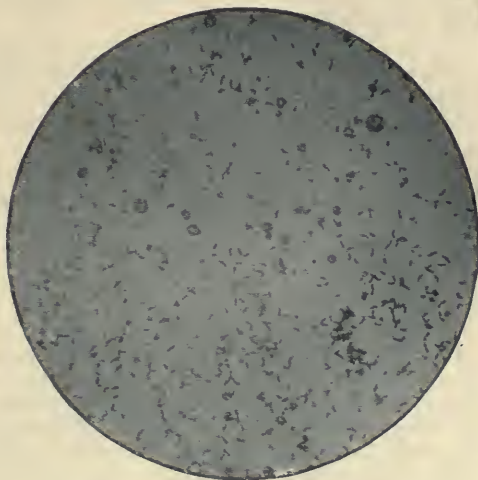
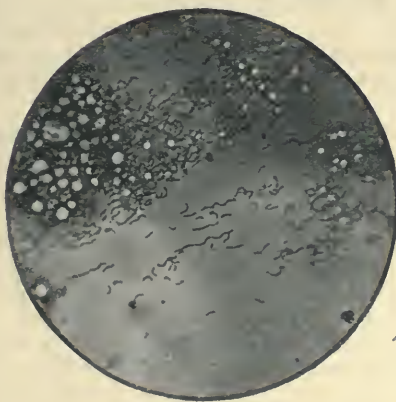


FIG. 12.



EXPLANATION OF THE ILLUSTRATIONS.

FIG. 1. Colony of cholera bacilli on a plate culture forty hours after its preparation. Photographed with Abbé condenser and small diaphragm. The refraction of the light by the depressed surface of the softened gelatin around the colony is perceptible. Amplification about 40 diameters. Culture obtained from intestinal contents of the first case.

FIG. 2. Colony of cholera bacilli on a plate culture two days old. Magnified about 75 diameters. Small diaphragm.

FIG. 3. Two colonies of cholera bacilli on a plate culture forty hours old. One of the colonies shows an extension of the liquefaction for a short distance beyond the central mass of growth. The edge of the central mass is ragged, and portions of the growth have become detached.

FIG. 4. Cholera colony on a plate culture after liquefaction of the gelatin had begun, but had not extended beyond the colony of bacilli. Photographed with a very small diaphragm. The edge of the colony shows the milled effect described in the text.

FIG. 5. Gelatin-tube cultures of cholera from the first case (McAvoy), one, two, three, four, and six days old. Temperature during development about 70° F. The culture medium was prepared from a cold aqueous extract of lean beef, to which 1 per cent of peptone, $\frac{1}{2}$ per cent. of salt, and 10 per cent. of gelatin had been added, according to the methods usual in the Hygienic Institute in Berlin. The reaction of the gelatin was faintly alkaline.

FIGS. 6, 7, 8, and 9 are parallel gelatin-tube cultures from the first seven cases in which the cholera bacillus was found. They were inoculated at the same time from pure cultures upon agar, and developed at a temperature ranging between 50° and 60° F. They illustrate, when compared with Fig. 5, the influence of temperature upon the rapidity of growth. They also illustrate the identical appearance of cultures of the same bacillus grown under identical conditions, but derived from different sources. These photographs were taken after three, five, nine, and fifteen days' development.

FIG. 10. Contact cover-glass preparation from a plate culture of cholera after forty hours' development. Magnified about 700 diameters.

FIG. 11. Cover-glass preparation from a culture of cholera in peptone solution, developed for twelve hours at a temperature of 36° C. (96.8° F.). Magnified 700 diameters.

FIG. 12. Contact cover-glass preparation from a plate culture developed at a low temperature. Amplification about 700 diameters.

REVIEWS.

THE ESSENTIALS OF HISTOLOGY. By E. A. SCHÄFER, F.R.S. Third edition, revised and enlarged. Illustrated. Philadelphia: Lea Brothers & Co., 1892.

THE appearance of three editions within but little over twice that number of years, argues well for the usefulness and popularity of any book; such evidence of success the little volume under consideration has won. The revision by Professor Schäfer of the histological portions of Quain's *Anatomy* for the new tenth edition, in course of preparation, has afforded the opportunity of incorporating in the *Essentials* additional illustrations, as well as such changes in the text as the author has deemed desirable. Containing, as it does, the most useful histological figures of Quain, as well as others from varied sources, the book brings within the reach of everyone a most valuable collection of drawings; the additions to the present edition have still further emphasized this feature, and it is safe to say that nowhere else will the same very moderate outlay secure as thoroughly useful and interesting an atlas of structural anatomy as that presented in this volume.

While the former general plan of the book has been retained, almost every chapter—or “lesson,” as here termed—has been supplemented by new cuts.

A number of additional illustrations from several recognized authorities materially facilitate the student's comprehension of the newer accepted views regarding the structure of protoplasm and the complicated karyomitotic cycle accompanying cell-division. The sections devoted to the brain and spinal cord are greatly improved by the new figures taken from preparations made by approved present methods. The results of the recent elaborate investigations concerning the minute anatomy of the great nervous centres, following the introduction of the new silver stainings by Golgi, Ramón y Cajal, Kölliker, and others, have received recognition, some of the most instructive pictures of tissues so treated finding their place among the older figures.

The chapter discussing voluntary muscle presents the author's more recent conclusions regarding the difficult, and still unsettled, problem of the ultimate structure of striated muscular tissue. With Rollett and Kölliker, the author recognizes two substances within the sarcolemma of the muscle fibre—the darker, doubly-refracting, contractile substance, arranged as longitudinal threads, the muscle columns (Kölliker) or *sarcostyles* (Schäfer), and the lighter, less active, and non-contractile *sarcoplasma*. The *sarcostyles* are regarded as being themselves composed of longitudinal series of segments, the *sarcomeres*. These latter are made up of sarcous substance, and are pierced by minute, short tubular canals, extending from the clear zone at either end of the sarcomere toward the middle of the disk. Schäfer concludes that the well-known phenomena

of contraction—the approximation of the dark bands and the increase in the width of the sarcous elements—really depend upon the partial entrance into or extrusion from the minute canals or pores, by which the apparent amount of the clear, non-contractile substance diminishes or increases. While basing his views on a study of the wing muscles of insects, Prof. Schäfer is convinced that the arrangements there found are directly applicable to the vertebrate muscle.

The Appendix is supplemented in the present edition by the introduction of several of the more recent methods. It is curious to note, in connection with interstitial paraffin imbedding, the retention of the misleading sentence directing that the paraffin should be “dissolved out by turpentine or xylol and the sections mounted.” That the author appreciates the necessity of first fixing delicate sections to the slide before the supporting paraffin is removed goes without saying; the less fortunate tyro, however, following the letter of the text, would probably wonder wherein lay the value of the paraffin method, if the beautiful sections it yields are but to be subsequently reduced to hopeless fragments by premature removal of the supporting imbedding mass.

The author's choice in favor of the Cambridge rocking microtome for ribbon-series, on the one hand, and the Thoma instrument for ordinary cutting on the other, will be challenged. Anyone who has had the opportunity of comparing, by actual use, the relative merits of the Cambridge instrument with the automatic microtome of Minot can scarcely fail to prefer the latter for serial work, while, as an all-round section instrument, the microtome of Schanze stands unrivalled.

While recognizing fully the author's acknowledged purpose to omit “unimportant details,” yet we confess to a sense of disappointment in the meagre description of many organs, even when elaborately illustrated. Experience warrants the belief that a somewhat fuller presentation of the structure and relations of not a few of the parts considered would aid, rather than confuse, the student in acquiring the *essentials* of the subject.

With the additional merits that the present edition possesses, the continued success of the work as a concise text-book, containing the rudiments of histology, is well assured. G. A. P.

TEMPERAMENT, DISEASE, AND HEALTH. By FRENCH ENSOR CHADWICK, Commander U. S. N. 8vo., pp. 85. New York: G. P. Putnam's Sons.

ALL books that have for their chief object the exposition to the general public of the importance of hygiene and preventive medicine are of distinct good; their actual value depending largely, of course, on the clearness and simplicity with which the scientific facts are set forth.

In *Temperament, Disease, and Health*, the author has gathered together the opinions of modern scientists regarding the part which microorganisms play in the causation of disease, and has added some theories of his own in respect to temperament, as well as a chapter on Health, in which some useful information is given regarding the hygiene of everyday life.

On the whole, this little work, while rather too technical for the general public, will be of value to a certain class of non-medical persons.

F. W.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL
AND HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

THE USE OF STRYCHNINE AND DIGITALIS IN DIARRHŒA.

MR. HAROLD HENDLEY notices that, in fevers of a remittent character, the complication of persistent diarrhœa occurred frequently, and at periods when the patient was worn out by fever and the digestive powers were rapidly failing, determined to use these drugs to combat certain symptoms. In these cases the temperature ranges from 1° to $2\frac{1}{2}^{\circ}$ above normal, the pulse is soft and yielding, not very rapid, and markedly wanting in tone; the motions, four or five daily, increase in number until nourishment appears to excite an action of the bowels, marked by even a greater tendency to fluidity, the extreme being reached when the motions escaped involuntarily, and is followed by a tendency to cardiac failure, if not collapse, frequently accompanied by a consciousness of approaching dissolution in the patient. Digitalis was chosen for these cases because of its well-known general action upon the vasomotor system, strychnine for its less-known more direct action upon that portion of the system concerned in the control of the blood supply to the intestines. The mixture employed was tr. digitalis, $\mathfrak{m}\text{iv}$; liq. strychniæ, $\mathfrak{m}\text{ij}$; spts. chloroformi, $\mathfrak{m}\text{v}$; in water, and repeated at from one to four hourly intervals.—*The Practitioner*, 1892, No. 290, p. 92.

THE TREATMENT OF CERTAIN REBELLIOUS HEMORRHAGES BY COUNTER-IRRITATION OVER THE SPLENIC OR HEPATIC AREA.

DR. L.-H. PETTIT, calling attention to the close relationship which exists between spontaneous hemorrhages and chronic diseases of the liver, regards the logical treatment of this symptom to be the application of counter-irritation over that organ. *En résumé*: in the event of an abundant spontaneous hemorrhage, or if it is repeated, it is necessary to examine with care the con-

dition of the liver, spleen, and kidneys, and if these organs are diseased it is indicated, at least as far as the liver or spleen is concerned, to apply a cutaneous revulsive more or less energetically in these regions—either blisters or the actual cautery. A milk diet is indicated in the case of nephritis. Perhaps it is advisable that we should also employ digitalis in hemorrhages due to cardiac disease. The intensity of the necessary revulsion varies according to circumstances; in some cases vesication for an hour is sufficient, in others energetic and repeated applications are necessary.—*L'Union Médicale*, 1892, No. 106, p. 361.

MECHANICAL TREATMENT OF CHRONIC RHEUMATISM.

DR. C. O. WALBRIDGE recommends mechanical means, including calisthenics, with its healthful exercise of body and limbs, to break up existing adhesions, to smooth the roughened articular cartilages, strengthen the contracted tendons and nerve tissues, and restore the joint to its former suppleness—first, by a process of stroking and kneading in a centripetal direction, stimulating the lymphatics and venous currents and surrounding tissues to greater activity, carrying the lymph with greater rapidity toward the centre. By these means the lymphatics and circulating system are stimulated, setting up changes in the nutrition, causing healthy activity in the parts. In cases where there is perceptible defective nutrition, constitutional remedies with dietetic medication must be employed. The primary effects are upon the joints, muscles, and nerves. In the joints stiffness, adhesions, and contracted tendons are broken up and got into a proper condition for absorption. The secondary effects are produced upon the circulation and lymphatic system. The muscles and nerves are surely elongated, heat must necessarily be evolved by the manipulations changing the molecules of the muscles from an inactive to an active state, causing internal work, setting up molecular changes in all of the surrounding tissues. The waste material is carried away by increased action of the lymph and circulation, and new nourishment is more readily carried to all parts, feeding them and enlivening the whole organism.—*The Dietetic Gazette*, 1892, No. 9, p. 122.

EUPHORINE.

DR. H. KÖSTER has very carefully studied this remedy, now in use for about two years, and otherwise known as phenyl-urethane. It is used as an antipyretic and antiseptic, but more especially for rheumatism and neuralgia, in eight-grain doses in the form of powder given thrice daily. It does not influence the pulse or respiration, although slight cyanosis has been noticed, and marked symptoms of collapse (one case) have been observed. The remedy is acceptable to the stomach; it produces no subjective symptoms, with the exception of a few cases noted by Sansoni, where a feeling of warmth was experienced; it does not produce any reddening of the skin. He has used this remedy in ninety cases, the temperature being taken in the rectum. In estimating its value as an antipyretic in forty-two cases of different diseases (tonsillitis, acute pneumonia, typhoid fever, influenza, endocarditis, tuberculosis), it can be stated that it is a powerful and practicable antipyretic, but somewhat capricious in its action, at times producing marked effects, and

at others, in the same patient, by no means having a similar effect, and that without any satisfactory reason being apparent. After using this remedy in twenty cases of headache, it is evident that it cannot compare with other more usually employed remedies, but may succeed where they have failed. Eleven cases of sciatica were treated without any noticeable, or absolutely without any, result. In fourteen cases of acute articular and seven of muscular rheumatism the results were that the temperature was speedily reduced, leaving the patient without fever after four or five days; the pains were usually lessened, in several cases completely removed, but the treatment was of longer duration than with the salicylates. Yet in some cases the effusion and sensitiveness of the joints disappeared, while the slight remaining pain necessitated the use of the last-mentioned remedies. On the whole, in muscular rheumatism the results were so unsatisfactory that other remedies must be resorted to.—*Therapeutische Monatshefte*, 1892, Heft 8, S. 397.

THE ANATOMICAL CHANGES IN POISONING BY SUBLIMATE.

DR. ANDREA CALANTONI presents a very thoroughly scientific and carefully prepared paper, based upon the literature and upon experiments in the laboratory, from which he deduces the following conclusions: The sublimate penetrating into the blood is eliminated by the kidneys (in a large part) and by the intestine, giving rise, in these organs, to changes of a necrotic nature. In the kidneys, a single large dose being followed by death in a few hours, no changes, save small hemorrhages in the inter-cellular tissues, are found. If life is prolonged from five to ten hours there is found cloudy swelling of the protoplasm; if still longer, epithelial necrosis is clearly shown. In some cases of subacute poisoning there is found a deposition of lime, but differing from the calcareous metastasis of Virchow, in that it is a calcification of single elements and not a secretion of lime from acute decalcification of bone or modification of diffusive power of the renal filter. In the intestine the alterations are chiefly found in the large intestine, and consist of hyperæmia, hemorrhage, and necrosis at the summit of the folds, presenting all the characteristics of a diphtheritic process. There is apparently no relation between the severity of the renal and intestinal lesions. The results of necropsy do not furnish a sure, but only a probable anatomical diagnosis.—*Giornale della Associazione Napolitana di Medici e Naturalisti*, 1892, Puntata i, p. 1.

THE TREATMENT OF TUBERCULAR ADENITIS BY THE METHOD OF LANNELONGUE.

DR. MONCORVO reports a case in which a glandular tumor of tubercular origin, seated in the left submaxillary region, was cured by the injection of four drops of a 5 per cent. aqueous solution of chloride of zinc into the periphery of the tumor. This injection was repeated at varying periods of three to five days, one intermission of six days being necessitated by pain and local reaction. On resuming, two injections of three drops each were made at fortnightly intervals, when local treatment ceased, about two months having elapsed. Four months later examination showed only three small glands, hard to the touch and insensitive to pressure. The general condition of the patient had markedly improved.—*Nouveaux Remèdes*, 1892, No. 15, p. 347.

THE VALUE OF QUININE IN MALARIAL HÆMATURIA.

PROF. H. A. HARE, in a very scholarly paper, concludes that in the milder forms of the disease quinine should not be employed during the hæmaturia, nor in those cases in which idiosyncrasies exist. In cases which are malignant in their manifestations in other lines than the mere hæmaturia, and depend upon a malarial paroxysm superimposed upon a malarial dyscrasia, then quinine is needed; but in the hæmaturia following prolonged subacute or chronic malarial poisoning, it is not to be given in full doses, but only as a tonic, the physician relying upon change of climate, nutritive foods, tonics, and other drugs to renovate the patient's tissues.—*Therapeutic Gazette*, 1892, No. 7, p. 448.

THE INTRA-VENOUS TRANSFUSION OF ARTIFICIAL SERUM IN CHOLERA PATIENTS.

DR. L. GALLIARD has employed this method in the treatment of 150 cases, making use of the internal saphenous vein. The formula is: sterilized distilled water 1000, pure chloride of soda 5, sulphate of soda 10, at the temperature of the body, the injection for adults being two quarts. The reason for this treatment is simply to gain time, and aid by these injections the action of remedies. It is not contra-indicated—1, in dry cholera; 2, slow progress of the disease; 3, subnormal rectal temperature; 4, febrile conditions; 5, advanced age of the patient; 6, pregnancy, alcoholism, tuberculosis, cancer, or cardiac affections, although these militate against the success of the operation. The percentage of cures is over fifty. When transfusion was practised in *extremis* one out of six cases has been saved.—*Gazette hebdomadaire de Médecine et de Chirurgie*, 1892, No. 41, p. 481.

ASAPROL.

M. AUGUSTE BOMPARD has made a very thorough study of this new aspirant for therapeutic favor. Asaprol was so named by Dujardin-Beaumetz (α , privative, and $\sigma\alpha\pi\rho\delta\varsigma$, putrid), from its properties as a general antiseptic. It is a derivative of β -naphthol (β -naphthol: α -mono-sulphonate of calcium), and has the formula $C_{10}H_6 \begin{smallmatrix} \alpha SO_3H \\ \beta OH \end{smallmatrix}$, in the condition of a lime salt, and occurs as a whitish, odorless, bitter powder; soluble in three parts of distilled water, and in alcohol less soluble. About one-half of the amount ingested is eliminated in the urine; more, however, being thus eliminated if administered in *cachets*. As an antiseptic, in 2 per cent. solution, it retards the development of the bacilli of Asiatic cholera, herpes tonsurans, and typhoid fever; a three per cent. solution completely arrested the two former, and markedly retarded the growth of the bacilli of typhoid, bacillus pyocyaneus, staphylococcus aureus, and of the bacteria of anthrax. As an antipyretic the effect is manifest, rapid, and persistent; in addition, it possesses marked analgesic properties. In the experience of Stackler it was a better antipyretic and analgesic in influenza than antipyrine and quinine, administered consecutively or combined. It is of especial value in acute articular rheumatism, in daily dosage of from fifteen to sixty grains, administered in *cachets*, requiring but two days to demonstrate a marked amelioration of the symptoms. In this relation the

excellent results are explained by the generally accepted theory of the microbian origin of acute articular rheumatism, where a general antiseptic, like the one under consideration, can be administered in sufficient doses without harm to the patient. Here its action is quite as rapid as that of the salicylates, and relief is well marked, usually upon the second day, and becomes constantly more marked, and, on the average, cure results in eight days. It is even more certain than the salicylates, no failures being recorded, while in about 22 per cent. of the cases in which the salicylates are employed failures occur. Nor indeed does it, as the salicylates, give rise to nausea or vomiting. Although its taste is bitter, it is not nauseating, nor does it produce vomiting; and, too, the auditory disturbances and the cerebral congestions (of old age) are absent. It is efficient in less than one-half the dose of the salicylates. In fine, it yields in no respect to them, and in certain cases it is superior in that it presents none of their inconveniences. On the other hand, while acute articular rheumatism is of infectious origin, the chronic is undoubtedly the result of a disturbance of nutrition; therefore, in the latter case, we expect to obtain no result other than a temporary analgesic one—and that, indeed, not always. The method of administration is important, the normal dose being sixty grains; rather less than double this quantity if administered by the rectum. The first day the dose should be thirty grains, the next forty-five, and the succeeding days the full amount of sixty grains is needed; which can, if necessary, be continued for several weeks, finally terminating the treatment by gradually diminishing the daily amount. It is better to give small doses at frequent intervals, so that the organism may be kept continuously under the influence of the drug. It can be given in distilled water (a 5 per cent. solution), or in syrup and anise-seed water, or in *cachets*, or as an excellent gargle, in mulberry syrup and in infusion of blackberry leaves. Being a lime salt it is naturally incompatible with all salts which precipitate lime, notably the soluble sulphates and bicarbonate of soda. Iodide of potassium is absolutely incompatible with it. He concludes: 1. It is a soluble body. 2. It is a good general antiseptic. 3. It is a good antipyretic. 4. It possesses analgesic properties. 5. It is a remedy of choice in acute articular rheumatism. 6. It favorably modifies the anginas; it modifies the infectious condition in pneumonia.—*Thèse, Faculté de Médecine de Paris*, 1892.

TRIONAL AS AN HYPNOTIC.

DR. A. BOETTIGER has used this remedy, otherwise known as diethylsulphon methylethylmenthan, in about seventy-five cases in which insomnia has been a prominent symptom. The doses vary from fifteen to sixty grains, administered as a powder in warm water, milk, soup, or tea, in two or three doses, the last being at bedtime. In simple insomnia, sleep follows generally within an hour and lasts six to nine hours. It is apparently as effective in one-third the dose as chloralamide or amylene hydrate. In insomnia the sequence of bodily pain, the conclusion is that the pain itself is not influenced. Among insane patients, mildly affected, trional is a serviceable hypnotic; in more severe cases, in larger dosage—that is, from frequent repetitions—it is often valuable. Apparently patients do not become habituated from continued usage.—*Berliner klinische Wochenschrift*, 1892, No. 42, S. 1045.

SALOPHEN.

DR. CAMINER, from his observations of the use of this remedy, has not found that it disarranged digestion, but that only in the intestine is it decomposed into its constituents, salicylic acid and acetylparamidophenol. He administers it in fifteen-grain doses, every two hours, up to the daily amount of ninety grains, in acute articular rheumatism. It produces marked results upon pain, redness, and swelling, so that within six to ten days the patient is entirely free from pain, nor has he observed any relapses. As acetylparamidophenol is a decomposition-product of phenacetine, to which with probability may be ascribed its analgesic properties, we may expect that this compound will relieve pain more markedly than either salicylic acid or phenacetine alone. He records its successful use in habitual headaches, trigeminal neuralgias, and failure in sciatica (one case). In hemicrania, relief follows its administration during the attack, but the intervals are not lessened. He reports no toxic effects in the cases under observation.—*Therapeutische Monatshefte*, 1892, Heft 10, S. 519.

LOSOPHAN.

DR. EDMUND SAALFELD reports that this new aspirant for recognition among the iodine preparations has the formula $C_6H_4I_3.CH_3.OH$, occurring in white needles, soluble with some difficulty in alcohol, but easily in ether, benzol, and chloroform; it contains about 80 per cent. of iodine. It has been used in a 2 per cent. solution in equal parts of alcohol and water, but on account of precipitation a 1 per cent. solution is preferable, together with a larger percentage of alcohol (to 75 per cent.). The reported cases include those of mycosis tonsurans, herpes tonsurans, sycosis parasitaria, and pityriasis versicolor. In eczema it has been used as a 1 or 2 per cent. ointment of vaseline or of lanolin to which 20 per cent of vaseline is added. He has found it of use in most of the mycoses, in prurigo, and in chronic infiltrated eczema, sycosis vulgaris, acne vulgaris, and rosacea. It is of less use as an anti-pruritic in urticaria, and without result in psoriasis vulgaris and primary syphilitic affections. In the form of a dusting-powder it does not markedly affect secretion and is of secondary value as compared with other commonly used remedies. It is contra-indicated in all acute inflammatory cutaneous diseases, which are irritated by it even in weak solutions.—*Therapeutische Monatshefte*, 1892, Heft 10, S. 544.

THE HARMLESSNESS OF DERMATOL.

DR. E. GLAESER reports an instance in which a liberal use of subgallate of bismuth in powder form with flushings of a 1 per cent. sublimate solution was followed by death, the patient having received extensive burns from the explosion of a kerosene lamp. By means of the alkaline secretion from the wounds the dermatol is broken up into gallic acid, hitherto shown by Heinz to be absolutely innocuous, and into oxide of bismuth. In this case the bismuth or the mercury must have been at fault, and taking into consideration the results of the necropsy, he believes that this death could be justly attributed to the sublimate. However, the fact that bismuth may give rise to toxic

symptoms, as has been pointed out by Kocher and Petersen, should be borne in mind.—*Berliner klinische Wochenschrift*, 1892, No. 41, S. 1024.

[The author calls attention to the fact, quoting Langhaus, that in bismuth poisoning the same calcareous changes are found in the kidneys as in sublimé intoxication.—R. W. W.]

THE TREATMENT OF CHOLERA IN THE ALTONA HOSPITAL.

DR. DU MESNIL has had under his observation about five hundred cases during the last epidemic. To destroy the bacteria *in situ* he administers calomel in seven-grain doses twice in the course of two hours, following with grain doses every second hour, believing this to be of more value than salol, creolin, or other cresol preparations. Further antisepsis he obtains with Cantani's tannin injection (10 : 2000). To meet the indication presented by the abstraction of water from the tissues and thickening of the blood and the resultant symptoms, he employs the sodium chloride infusion injected into the veins. He stimulates the heart, when it is required, with camphor, makes use of baths, 90° to 96° F., and relieves vomiting and muscular cramps in legs by morphine. The mortality, excluding the cases of diarrhœa when the diagnosis was not established, was 58 per cent.—*Münchener medicinische Wochenschrift*, 1892, No. 41, S. 722.

THE COMPARATIVE ACTIONS OF ANTIPYRINE, PHENACETINE, AND PHENOCOLL ON THE CIRCULATORY AND HEAT PHENOMENA.

DRS. DAVID CERNA and WILLIAM S. CARTER record their conclusions as follows: 1. *Antipyrine* in small and moderate amounts produces a rise of the arterial pressure, this stimulating effect being due to an action upon the heart. 2. The lowering of the pressure by large or toxic doses is due similarly to a depressant effect of the drug upon the cardiac organ. The remedy does not seem to influence the vasomotor system. 3. *Antipyrine* causes an increase in the pulse-rate through paralysis of the cardio-inhibitory centres. The secondary decrease in the number of pulsations is of purely cardiac origin, the drug exercising a depressant effect upon the heart itself. 4. In excessive doses only, it changes the hæmoglobin of the blood into methæmoglobin. 1. *Phenacetine* in moderate doses causes a rise of arterial pressure by acting upon the heart, and probably, likewise by a stimulating influence exercised on the vasomotor system. 2. The reduction of pressure by the drug in large amounts is mainly of cardiac origin. 3. It increases, in small doses, the force of the heart by direct action. 4. It increases the pulse-rate chiefly by cardiac stimulation, and possibly also by influencing the cardio-accelerating apparatus. 5. It reduces the number of the pulsations, especially when given in large quantities, primarily by stimulating the cardio-inhibitory centres, and later, by a depressant action upon the heart. 1. *Phenocoll* in ordinary amounts has practically no effect upon the circulation. 2. Large doses diminish the blood pressure by influencing the heart. 3. It reduces the pulse-rate by stimulating the cardio-inhibitory centres. It then increases the rapidity of the pulse by paralyzing these centres. The final diminution is of cardiac origin. 4. Upon the blood itself it has no action. In regard to *heat*

phenomena it was found—1. That all three fail to produce any effect on the heat functions of the normal animal. 2. Antipyrine produces a decided fall of temperature in the first hour after its administration to a fevered animal. This reduction is due to a great increase in heat distribution, together with a fall in heat production. 3. Phenacetine, both in septic and albumose fevers, produces a very slight fall of temperature during the first and second hours after its ingestion by the stomach, but the greatest reduction occurs the third hour after its ingestion. The fall of temperature results chiefly from a decrease in heat production, with a slight increase in the heat distribution; the increase in distribution is not so great as with antipyrine. Probably the delayed action of the drug depends upon its insolubility. 4. Phenocoll causes in fever a very decided fall in temperature, which occurs the first hour after the administration of the drug by the stomach. This reduction is the result of an enormous diminution of heat production, without any alteration of heat distribution.—*Notes on New Remedies*, 1892, No. 4, p. 49.

MEDICIN .

UNDER THE CHARGE OF

W. PASTEUR, M.D. LOND., F.R.C.P.,

ASSISTANT PHYSICIAN TO THE MIDDLESEX HOSPITAL; PHYSICIAN TO THE NORTHEASTERN
HOSPITAL FOR CHILDREN;

AND

SOLOMON SOLIS-COHEN, A.M., M.D.,

PROFESSOR OF CLINICAL MEDICINE AND APPLIED THERAPEUTICS IN THE PHILADELPHIA
POLYCLINIC; PHYSICIAN TO THE PHILADELPHIA HOSPITAL.

A CASE OF PHLEGMONOUS GASTRITIS AND A CASE OF SUB-PHRENIC ABSCESS.

MEYER (*St. Petersburger medicinische Hochenschr.*, 1892, No. 40, p. 373) reports the case of an engineer, forty-one years old, who, a day after participating in a social gathering, complained of a feeling of indisposition. In the evening a chill occurred, and the patient began to act strangely. Later in the night vomiting of bile and mucus set in. On the following days the vomiting continued; the abdomen was tender; the pulse was small, hard, and regular; the pupils were small and sluggish; the temperature was elevated; delirium continued; albumin appeared in the urine; slight jaundice developed; the area of hepatic percussion dulness became increased and painful; posteriorly the pulmonary percussion note was impaired to the level of the spine of the scapula, with enfeeblement of the respiratory murmur, while, above, the breathing was bronchial. The patient failed to improve; pulmonary oedema set in, and death took place. At the autopsy the right pleural cavity contained a small quantity of turbid fluid, the left pleural cavity clear serum with numerous gelatinous fibrin-coagula. The

pericardial sac also contained an excess of clear yellow serum. The diaphragm was elevated, so that the heart lay horizontally. The diaphragmatic surface of the liver, as well as the lower extremity of the ileum just above the ileo-cæcal valve, was covered with pus and fibrin. The small pelvis contained turbid purulent fibrinous fluid. The spleen was conspicuously enlarged. The biliary passages were patulous. The portal vein contained a recent thrombus. The fundus of the stomach presented numerous ecchymoses; close to the cardia, on the posterior wall, was an ill-defined circumscribed area, on incision in which two longitudinal cavities were found, three-quarters of an inch long, containing thickened pus, and seated between the mucosa and the muscularis. The peritoneum at a corresponding situation was infiltrated with pus. The inner surface of the dura mater presented traces of a yellowish deposit.

The second case occurred in a girl, twenty-one years old, who had long suffered with gastric derangement, and who was suddenly seized with symptoms suggestive of the rupture of a round ulcer of the stomach, followed by circumscribed peritonitis. The intense pain in the epigastrium subsided, however, but sharp pain appeared in the left hypochondrium, without demonstrable pleurisy. The temperature was elevated. After ten days slight cough set in, with scanty, rusty expectoration, the sputum containing elastic fibres and fatty pulmonary epithelium. At the same time a small area of dulness on percussion was evident at the base of the left chest posteriorly, with enfeebled respiratory murmur and fine moist râles. A few days later, blowing breathing was present at the inferior angle of the left scapula. Metallic tinkling could be heard. The left hypochondrium was tumid and tender to touch. After a time dark flakes, of a horribly offensive odor, were vomited. Asthenia became progressively more pronounced, and death took place twenty-six days after the beginning of the attack. At the autopsy a large cavity, with dark, gangrenous, disintegrating walls, was found beneath the left half of the diaphragm, bounded on the right by the left lobe of the liver and the suspensory ligament of the liver, anteriorly and inferiorly by the stomach and the transverse colon, and on the left by the spleen. The stomach communicated with the abscess by a small opening on the lesser curvature, which constituted the centre of a cicatrix of considerable size. The diaphragm contained four round discolored disintegrated areas, corresponding with which four small areas of infiltration were found in the adherent and pneumonic lung.

ADDISON'S DISEASE WITH TUBERCULOSIS OF THE SUPRA-RENAL BODIES.

DESNOS (*Gazette des Hôpitaux*) has reported the case of a chambermaid, twenty-six years old, without hereditary predisposition, who had variola and measles or scarlatina in childhood. Menstruation appeared first at the age of fifteen years, and recurred every ten days or two weeks. Dyspeptic symptoms had long been present; the appetite was impaired; there was heaviness after taking food; digestion was painful; and constipation was habitual. At the age of twenty-two the patient had "catarrhal fever," with diarrhœa and vomiting. Immediately after this illness it was observed that the skin had become discolored. At the age of twenty-three, vomiting and diarrhœa

reappeared for three days and three nights, being followed by a febrile period of a month, the subsequent convalescence extending over a period of six months. Shortly before coming under observation a slight hæmoptysis had occurred. The woman had never been pregnant. Three weeks before admission to the hospital the patient was seized with a sensation of intense cold in the back, together with a sense of weakness, necessitating her taking to bed. The appetite had entirely disappeared. In two weeks considerable emaciation had taken place (from having weighed one hundred and forty pounds the patient weighed but seventy-five pounds). Vomiting was frequent. Constipation had been replaced by diarrhœa. Asthenia was most profound. The voice was feeble and slow. The face was covered with perspiration. The skin was bronze-colored, most prominently in those situations that are commonly exposed to the air. The pigmentation was most decided upon the face, the nucha, the dorsa of the hands, in the groins, on the breasts, on the internal surfaces of the knees, in the linea alba below the umbilicus and upon the free border of the greater and lesser lips of the vulva. The middle third of the external surface of the right arm presented several pigmented patches. The inner surface of the cheeks presented three or four areas of pigmentation on each side, and there was another area under the tongue. No evidence of the existence of malarial infection could be obtained. There was no history of syphilis. The patient stated that at certain times the pigmentation seemed to temporarily disappear. There was complaint of intermittent headache; of pains in the members and in the joints; epigastric pain was decided, and there was pain in the lumbar regions; occasionally girdle-pains were present. Sensation was preserved, except in the pharynx, where there was anæsthesia. The knee-jerks were preserved. Sleep was disturbed by frightful dreams. In both lungs subcrepitant râles could be heard in the supra-spinous regions. The quantity of urine passed and the proportion of contained urea were less than normal. The number of red corpuscles in the blood was normal; the proportion of hæmoglobin reduced more than half. Death resulted from asthenia. The temperature had been irregularly elevated. At the post-mortem examination the lungs were found to be tuberculous at the apices; the left lung presented cavities filled with cheesy matter; in the right were a number of calcareous areas. The supra-renal bodies were large and bound by adhesions to the kidneys; the right body was also adherent to the liver; it was bosselated and its surface was irregular. On section, both were in process of cheesy degeneration, in parts calcified. Histologically, they presented the appearances of tuberculosis at various stages. A lymphatic gland removed from behind the liver presented similar lesions.—*L'Abbeille Médicale*, 1892, No. 48, p. 380.

SUPERFICIAL DISSECTING OESOPHAGITIS.

ROSENBERG (*Centralbl. f. allgem. Pathologie u. pathol. Anatomie*, Bd. iii., No. 18, p. 753) has reported the case of a heavily built man, twenty years old, who had for two years suffered with dyspeptic symptoms, for the relief of which he had confined himself to a liquid diet, exercising great care in deglutition. There was alternate improvement and aggravation of the man's condition. Fever was absent. No obstruction to the passage of the sound was

encountered in the œsophagus. On one occasion the patient was seized with vomiting and retching associated with a sense of suffocation, in the course of which he ejected a tube of membrane about seven inches long, with walls of varying thickness, and the external surface of which was streaked with blood. On section and microscopic examination the membrane was found to be composed of five layers; the innermost and principal layer consisted of normal large, apparently healthy pavement epithelial cells, with oval nuclei that stained well; next came a layer of delicate granular fibrin in which a few leukocytes were imbedded; then came a layer made of horny epithelial cells without nuclei, arranged concentrically in lamellæ-like epithelial pearls, and which stained poorly or not at all; the fourth layer was constituted of globular conglomerations of leukocytes that stained fairly well; the last layer was made up of globular collections of unchanged epithelial cells, without nuclei, that stained well.

Rosenberg refers to the case reported by Birch-Hirschfeld as pseudo-croupous œsophagitis, and to that reported by Reichmann as exfoliative œsophagitis, and prefers the designation "superficial dissecting œsophagitis" as the most applicable to his case.

THE QUANTITATIVE RELATIONS OF THE BLOOD CORPUSCLES IN VARIOLA AND ITS COMPLICATIONS.

PICK (*Prager med. Wochenschr.*, 1892, No. 40, p. 463) has reported the results of a study of the blood in forty-two cases of variola. Most of the cases came under observation early and examinations were made daily. In the stage of eruption the number of white corpuscles was, as a rule, found not increased, but as soon as the eruption had been completed in the apyretic stage of the formation of vesicles, or as soon as the contents of the vesicles began to become turbid—*i. e.*, on about the fifth or seventh day—an increase in the number of white cells usually set in, the earlier the more severe the attack, and mostly before the temperature had risen. In the further course of the leukocytosis the number of white corpuscles corresponded with the elevation of temperature; the leukocytosis, however, reached its acme about two days before the acme of the suppurative stage. The degree of leukocytosis was in general in proportion to the intensity of the attack. At no time was a considerable diminution in the number of red cells found. Lobular pneumonia was the most common complication, appearing in 12 of the 42 cases, and 10 of which terminated fatally. In eight of the last there was no leukocytosis; the other two had complications. In the two cases complicated by bronchopneumonia that recovered there was pronounced leukocytosis. Six cases in which bronchitis occurred as a complication presented leukocytosis. The occurrence of abscesses was also attended with leukocytosis.

A FATAL CASE OF NOMA IN AN ADULT.

HANSSON (*Centralbl. f. Chirurgie*, 1892, No. 41, p. 845) has reported the case of a man, fifty-five years old, who had the carious first molar tooth of the upper jaw removed. There was also a pretty firm œdematous swelling of the entire right cheek, and inspection of the mouth disclosed the existence of a stomatitis. Energetic antiphlogistic measures were at once instituted,

but the swelling of the cheek progressed in intensity, the lower eyelid becoming involved. The skin of the cheek was tense, pale, and of a waxy appearance. In the mouth, opposite the site of the extracted tooth, was a necrotic area as large as a cherry-stone. This was excised, and a thorough application of silver nitrate made. The mouth was frequently washed with antiseptic solutions. The swelling diminished somewhat, but the gangrene extended. The discharge of saliva was abundant and offensive. The gangrenous tissue was again excised, but the process was not controlled; on the contrary, it extended to the neck, to the nose, and to the ear. The gangrene became more profound; symptoms of septicæmia appeared; and a purulent bronchitis developed to which the patient succumbed. An autopsy could not be held.

VALVULAR LESIONS OF THE HEART AND PULMONARY TUBERCULOSIS.

LANNOIS (*Revue de Médecine*, 1892, No. 10, p. 830) calls attention to the infrequency of the association of valvular disease of the heart and pulmonary tuberculosis in the same person, and reports an illustrative case. A blacksmith, thirty-nine years old, had had an attack of enteric fever at the age of five, followed by convulsions; at seventeen, an attack of acute articular rheumatism, with pericarditis; at twenty-three, a second attack of rheumatism, with endo-pericarditis; three years later, a third attack; and three years later, a fourth attack. From the age of eighteen years he had had a winter cough. Following the last attack of rheumatism the appetite had failed, strength and flesh had been lost, and albumin had appeared in the urine. The respiratory murmur became enfeebled below the clavicles; sonorous râles were heard posteriorly and at the bases, while the cough developed sibilant râles. The patient became ill at ease, felt slightly feverish, and took to bed. It was found that the temperature was 105°. Oppression of the chest set in. The sputum became nummular. Sibilant and subcrepitant râles were to be heard. The number of respirations was increased. Dyspnoea became marked and aphonia appeared. The patient grew progressively worse and finally succumbed. At the post-mortem examination the right pleural cavity was found obliterated by adhesions. Both lungs were congested. Beneath the pleura numerous gray granulations were visible, while the anterior margins of the lungs were emphysematous. On section, granulations, some of which were caseous, were found throughout both lungs, but in greatest number at the apices. The glands at the hilus of the lung were enlarged, but not caseous. The kidneys contained numerous miliary tubercles. The spleen was enlarged, the liver fatty. The heart was bound to the pericardium by old adhesions. Neither the organ nor its serous sac presented evidence of tuberculosis. Both the aortic and the mitral leaflets were thickened and the two valves were manifestly incompetent.

ANTISEPTIC TREATMENT OF PERNICIOUS ANÆMIA.

DR. G. A. GIBSON (Edinburgh), acting on the suggestion of Dr. W. Hunter, that the destruction of the blood in this disease may be due to the presence of toxic bodies originating in the alimentary canal, treated a case of per-

nicious anæmia with β -naphthol. The patient, a man, aged fifty-five years, presented all the classical features of the disease with the exception of dark urine and retinal hemorrhages.

On admission there were 800,000 red corpuscles per cubic millimetre, with obvious changes in shape and size.

Arsenic was tried first, but rapidly abandoned on account of gastric symptoms. Protochloride and perchloride of iron were next tried, but the patient continued to lose ground so much that transfusion (six ounces of defibrinated venous blood) was performed. Two days later the red corpuscles were 1,120,000; but by the end of a week they had fallen again to 920,000, and the patient's strength was rapidly failing. β -naphthol was now given thrice daily in 2-grain pills and continued for three weeks. There was considerable intestinal disturbance during this period, and during the first week of treatment the red corpuscles fell from 1,000,000 to 800,000. A severe attack of diarrhœa now supervened, during which the administration of the antiseptic appears to have been withheld. It abated at the end of a fortnight, when the general condition was noted as being distinctly better, anæmia of mucous membranes less marked, and red corpuscles 1,600,000. β -naphthol was again given twice a day, and the patient from this time continued to make satisfactory progress. The author is disposed to attribute the good result to the antiseptic. By way of control-experiments he has administered -naphthol to several anæmic patients and so far has observed a notable increase in the number of red corpuscles.—*Edinburgh Medical Journal*, 1892, No. 448.

AMOEBAE IN AN ABSCESS OF THE JAW.

FLEXNER (*Johns Hopkins Bulletin*, 1892, No. 25, p. 104) has reported the case of a man, sixty-two years old, who, nearly two years before coming under observation, had noticed a small hard lump within the mouth, beneath the gum, at the anterior part of the inferior maxillary bone, just to the right of the middle line. After two months the tumor was removed by an operation. Five months later an ulcer appeared at the site of operation, exposing the bone. A slight discharge set in and continued thereafter. In the course of fourteen months a hard swelling again appeared on the floor of the mouth, gradually increasing and extending beneath the chin to the front of the neck and below the jaw, forming a large and prominent swelling that occupied the entire space included within the arch of the inferior maxillary bone. The width of the mass corresponded with that of the lower jaw. The growth extended backward to the angle of the jaw and downward to the cricoid cartilage. It was firm, indurated, and immovably fixed, and felt like a solid growth. At the most prominent point of the tumor in front, however, tenderness was present and fluctuation could be detected. The teeth of the lower jaw were deficient. On the upper aspect of the transverse portion of the inferior maxilla the bone was denuded in a situation corresponding with the two incisors and the canine tooth of the right side. The exposed bone appeared spongy and was evidently necrotic. It was in part covered with dirty grayish purulent matter and shreds of greenish sloughing tissue. On making firm pressure over the tender and fluctuating area on the anterior aspect of the swelling, a small amount of dirty purulent material was

observed to ooze from an opening in the mouth over the necrotic bone. The breath was offensive. There was no glandular involvement. An incision evacuated about two and a half ounces of pus and exposed a large abscess cavity, the walls of which were quite thick. The necrotic bone was thoroughly scraped, the abscess cavity packed with iodoform gauze, and a dressing applied. The man did perfectly well, and at the time of the report bade fair to recover. The pus evacuated was grayish-yellow in color and extremely offensive in odor. It was not thick, but was mixed with a small quantity of blood, and contained a number of flakes and granules of lighter color and more opaque than the other constituents. Microscopic examination disclosed the presence of pus-cells, red blood-cells, bacteria, and amœbæ indistinguishable from the amœbæ dysenteriae; the last were especially abundant in the flakes. Subsequently, examination of the contents of the drainage-tube employed disclosed the presence of the same organisms. There was no history of diarrhœa.

A CASE OF PNEUMONIA FOLLOWED BY INDURATION.

FRAENKEL (*Deutsche medicin. Wochenschr.*, 1892, No. 43, p. 933) has reported the case of a man, forty-nine years old, who a year previously had suffered a left hemiplegia, the symptoms of which soon disappeared. It was noticed that from this time respiration had become stridulous. Four weeks before coming under observation the patient had been seized with an acute illness, attended with cough, rusty expectoration, and dulness on percussion over the lower lobe of the left lung, and which was thought to have been a pneumonia. The patient, however, failed to recover. There was atypical fever of remittent character, with evening exacerbations. Dyspnœa was marked and became aggravated in paroxysms. There was dulness on percussion of the left half of the chest, anteriorly and posteriorly, with a sense of board-like resistance, extending in a narrow band to the right of the sternum as low as the third rib. Within these limits the respiratory sounds and the vocal resonance were wanting. It was observed that the left radial pulse was smaller than the right. In hope of relieving a sudden attack of dyspnœa, the chest was punctured and nearly two pints and a half of bloody fluid permitted to escape. The difficulty in breathing was, however, not relieved. On further examination, slight systolic pulsation was detected on the anterior aspect of the left chest. The heart-sounds were obscure; the first sound at the apex was accompanied by a faint murmur. It was believed that there existed a sacculated aneurism of the aorta or a new-growth of the lung. The absence of enlarged glands was, however, opposed to the latter supposition. The patient died, and at the post-mortem examination the left lung was found voluminous, and in its upper portions adherent to the chest-wall. On section, the organ presented the appearances of carnification; the cut surface was smooth; the parenchyma was solid, dense, and tough, and presented numerous yellow points of fatty degeneration, corresponding with individual alveoli or groups of alveoli, in places constituting large areas. Microscopically the alveoli were found to contain a vascularized connective-tissue formation of inflammatory origin, with proliferated alveolar epithelial cells, and in places fibrin. The trachea was eroded above the bifurcation in consequence

of the pressure of an aneurism of the arch of the aorta, as large as a man's fist, and involving a considerable portion of the descending aorta as well.

Little is known of the conditions that lead to induration of the lung in cases of unresolved pneumonia. Some authorities believe that the condition is dependent upon the growth of young capillaries from the walls of the alveoli, analogous to the formation of a thrombus. Others make loss of the alveolar epithelium an antecedent condition. Fraenkel reports, in a previous case, having found in the tissues of the indurated area streptococci in pure culture, upon the presence of which he believes the process to be dependent.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE
UNIVERSITY AND GERMAN HOSPITALS;

ASSISTED BY

ALFRED C. WOOD, M.D., AND C. L. LEONARD, M.D.,

INSTRUCTOR IN CLINICAL SURGERY, UNIVERSITY OF PENNSYLVANIA; ASSISTANT SURGEON, UNIVERSITY HOSPITAL.	ASSISTANT INSTRUCTOR IN CLINICAL SUR- GERY IN THE UNIVERSITY OF PENNSYLVANIA.
---	---

THE RADICAL CURE OF CRURAL HERNIÆ.

IN reviewing the history of this subject, the following methods and their authors are quoted by SALZER (*Centralbl. für Chir.*, 1892, No. 33): Billroth sews the middle third of Poupart's ligament to the deep fascia, or unites it to the middle septum of the femoral sheath, using a triple silk suture. Czerny uses catgut; Schede, catgut, silk, or silver wire; the latter he has used since 1887, and finds it more certain, and also that it may remain *in situ* without harmful results. He had one relapse in four cases, which he had under observation—this relapse occurring after five years. Lauenstein united the falciform process and Gimbernat's ligament after folding the sac in the manner employed by Macewen in inguinal herniæ. Bergen fixes the ligated stump of the hernial sac above Poupart's ligament, and sutures the ligament to the aponeurosis of the pectineal muscle, producing a direct union. He advises that the thigh be flexed upon the pelvis during healing.

The author believes that in all these methods, where tension is employed by means of sutures, the resulting scar tissue is of doubtful utility, as has been shown in the relapse in Schede's case after five years, and advocates the following method, which he has employed successfully: A curved incision is made in the pectineal fascia beneath the femoral vessels, extending from near the crista pectinea to Gimbernat's ligament; a flap is dissected up, its base proximal and joining Gimbernat's ligament; the free or distal border he unites by silk sutures, without tension, to the middle third of Poupart's

ligament. Thus is formed a strong fibrous septum, which he deems a practical and certain method for the radical cure of these herniæ. His researches on the cadaver have shown that the pectineal fascia varies in thickness, and his observations during his operations lead him to believe that it is thickened in persons who have worn a truss, and in general is thicker in adults.

[Cushing, of Boston, after returning the gut, fastens the sac as a pad in the femoral ring, doubling it on itself, as in Macewen's operation, and sewing it by ligatures which at the same time pass through Poupart's ligament and the pubic portion of the fascia lata, thus closing the ring. The saphenous opening is also closed by slipping the pubic fascia under the sartorial fascia and suturing them together. I have used this method several times with great satisfaction.—J. W. W.]

TREATMENT OF GANGRENOUS HERNIA.

RANSOHOFF (*Annals of Surgery*, vol. xvi., No. 4) reports two cases of recovery in four of gangrenous hernia. In one the gangrenous portion of gut was fastened in the floor of the wound, and allowed to form a fistula and artificial anus, finally contracting and closing spontaneously. In the other case of recovery, fourteen inches of gut were removed, and an enterorrhaphy performed. The author believes primary resection to be the ideal method, and the one that should be attempted if the patient's condition will permit, but admits that in some cases the suturing of the intestine in the bottom of the wound, and dressing with antiseptic precautions, is a procedure of merit.

The disadvantages of primary resection as to the time it requires and the danger of peritonitis may be overcome by using a simple running Lembert suture, with occasionally an interrupted suture at points that seem weak. The septic danger is to be overcome by careful irrigation of the sac before opening the hernia, packing it with sterilized gauze, and opening and suturing the gut external to the wound so far as is possible, and furthermore, by leaving the wound open, packed with gauze and dressed antiseptically, the gut being controlled by a suture fixing it just within the wound, and thus providing drainage for any dangerous oozing. Many fatal results have occurred from returning into the abdomen suspicious-looking intestine, and in such cases he advises fixing the gut in the wound by antiseptic gauze until all danger of subsequent gangrene has passed.

SURGERY OF THE SPINAL CORD.

CHIPAULT (*Rev. de Chir.*, 1892, No. 8) describes the following methods of attacking the spinal cord: A linear longitudinal incision of considerable length over the posterior spines of the vertebrae is the best. This is carried into the deeper structures, the periosteum being raised and preserved as far as possible, in order to secure the bony covering of the wound after operation. Hemorrhage is stopped by compresses before the canal is opened. This he considers most effectually and safely done by the trephine, followed by cutting forceps one of whose blades is smooth and flat and can be introduced between the dura mater and the bone without danger, making a smooth opening that will not injure the membranes. The amount to be removed depends entirely on whether the object sought has been found or not.

The surgeon's duty does not end with the exploration of the extra-dural space, and the removal of tumors, clots, or spiculæ of bone that may be there present. The dura mater must be incised and its cavity explored, except where a peri-pachymeningitis might lead to further infection, or after extra-dural tumors have been found and removed; in a case of fracture it is always a necessity, or where there is an absence of pulsations synchronous with the pulse and respiration. The pre-dural adipose tissue should first be removed, then the incision is best made between two forceps that raise the dura mater and afterward serve as retractors. As the cerebro-spinal fluid pours out, the pulsations cease, and the outpouring ceases also after a few minutes. Then examinations can be made, tumors removed, and the partially or entirely severed cord sutured. The dura mater should then be sutured without drainage, to prevent the further escape of fluid, only the superficial wound being drained. To attack the anterior and lateral surfaces of the cord, the patient should be placed on two cushions, lying on the opposite side to the one to be investigated, and in such a manner that the spine makes a downward curvature between the cushions; by this curvature it is possible to rotate the cord on its longitudinal axis, and view either half as the case requires. It is also possible to introduce instruments between the lateral branching nerves and remove fungous growths on the bone or any in the canal, as also tumors. He also details operations of puncture for hydrocephalus, suture for fracture and dislocation, and warns operators against the effect of shock from anæsthetics, which he believes greater in these operations than in others.

[I have found the use of the trephine unnecessary in opening the canal. The dura can be best stitched by means of staphylorrhaphy needles.—J. W. W.]

MUSCULO-SPIRAL PARALYSIS IN FRACTURES OF THE HUMERUS.

MURRAY (*Annals of Surgery*, vol. xvi., No. 4) reports a case of musculo-spiral paralysis due to fracture of the humerus and improper dressing, and cured by resection of callus and the refracture and setting of the bone. He also adds 11 cases to the 79 already collected by Burns. Forty-two per cent. were treated by operation, and in almost all the nerve function was restored, while in only three cases was the nerve found to be divided. He advocates immediate operation for the relief of a paralysis after fracture, and also advises careful examination in all cases of fracture for signs of paralysis, before dressing. The preferable method of investigation is to find the nerve, either above or below the suspected point, and approach it gradually, thus lessening the danger of injury to it.

THE TREATMENT OF RENAL WOUNDS AFTER NEPHROTOMIES.

After reviewing numbers of cases in which spontaneous closure of the fistulæ was consecutive to nephrotomy, GUYON (*Annales des Mal. des Organes Genito-urinaires*, 1892, No. 9) concludes that in all cases of pyonephrosis nephrotomy is indicated, but that the character of the consecutive treatment is less easy to decide upon. The history of cases already reported shows that where the ureter remains patulous, there will be spontaneous closure of the wound, and that it is far preferable to allow this healing than to try to hasten

it by operative measures. Simple antiseptic drainage is all that is required. In cases where the ureter is obliterated there have been spontaneous closures of the fistulæ after nephrotomy, followed by contraction and loss of function in the kidney, but where this does not occur the nephrotomy makes an intracapsular nephrectomy easy. In other words, nephrotomy is recommended as the primary operation, while nephrectomy is only indicated in cases in which the occlusion of the ureter has been demonstrated, and the fistula fails to close.

[Preliminary nephrotomy certainly reduces the mortality of nephrectomy, but that it makes that operation "easy" I can scarcely believe, in the light of my own experience. The atrophied and immovable kidney, bound down by numerous adhesions, is far more difficult to handle and to isolate than the same organ at an earlier period of disease.—J. W. W.]

RESECTION OF THE ENTIRE ILIUM.

NÉLATON (*Rev. d'Orthopédie*, 1892, No. 5) reports a case in which the whole ilium was invaded by caseous and fungous masses. The entire bone was removed after the separation of the internal periosteum, by a division through the ilio-sacral articulation, the horizontal ramus of the pubis, and the postero-superior portion of the acetabulum. There was no involvement of the joint, and after thorough curetting, drainage, and antiseptic treatment the patient made a good recovery. A new fibrous articulation formed in a position corresponding to the external iliac fossa, there was shortening, but the use of a high shoe and cane enabled the patient to walk moderate distances. The author reports the case as a pathological curiosity and to show that with less than one ilium it is possible for a person to walk easily and well.

OPERATIONS ON THE SUPERIOR MAXILLA.

PANTALONI (*Arch. Prov. de Chir.*, 1892, No. 3) concludes that by the use of the position recommended by Rose in operations upon the superior maxilla, the use of the gag of O'Dwyer, the fixation of the tongue by forceps, and the hæmostatic use of tampons, perfect antiseptic conditions can be had without the annoyance of hemorrhage during the operation, while complete narcosis can be maintained throughout the operation by the interrupted method of chloroform anæsthesia. These methods, he believes, make unnecessary a previous tracheotomy and ligation of the external carotid, as also ligatures during or after the operation.

THE RESULTS OF 572 TRACHEOTOMIES FOR DIPHTHERIA.

HABS (*Deutsche Zeitschr. f. Chir.*, Band xxxiii., Heft 6) reports 572 cases of tracheotomy for diphtheria, with 316 deaths, or a mortality of 55½ per cent., extending over a period of six years, and showing a decrease of 9 per cent. between the first and last periods of three years each. The operation was most seldom performed in April, May, June, July, and August, and during these months the percentage of mortality was likewise the least. It increased gradually from that time, reaching its maximum in March, then decreasing.

The average length of treatment was sixteen to twenty days. The most children died in the first five days after the operation, nearly as many dying on the fourth day as on the day of operation; then the danger decreases till the eighth or ninth day, when pneumonia is to be feared as a cause of death. A relatively good prognosis can therefore be given in those cases in which the patient passes the fifth day, except where intercurrent complications appear. The best cases are those in which, after the operation, the breathing is free, no membranes are found, the pulse good, fever slight, and little albumin is present in the urine; while those cases are unpromising in which the breathing is not free, where slight retraction of the chest walls continues, and deep-seated membranes or a tendency to pneumonia are present—yet they are not hopeless, and, on the other hand, even in the most hopeful cases there are the secondary sequelæ to be feared.

The mortality is very high in the first two years of life, then falls, rising again during the sixth and ninth years to 40 per cent., and after the tenth rising to 59 per cent.; this is to be accounted for by the severe type that attacks older children. There is a greater percentage of deaths among male children than among female, and also more males are attacked by the disease.

[These results, which seem to show a percentage of recoveries of 44 $\frac{1}{4}$ per cent., are more favorable than are usually obtained in this country, where I believe the figures show 28 to 33 per cent. of successes. It is probable that H.'s cases were operated upon at a very early stage, as hospital patients abroad usually submit more promptly and unquestioningly to surgical measures than in America.—J. W. W.]

THE STERILIZATION OF IODOFORM EMULSIONS BEFORE THEIR INJECTION IN ARTHRITIC DISEASE.

STEUBENRAUCH (*Centralbl. f. Chir.*, 1892, No. 34) recommends that before each injection the iodoform emulsion be sterilized. This will prevent the inflammatory symptoms that have sometimes followed, which he attributes either to the free iodine found in the solution after sterilization, or, on the other hand, to the pathogenic organisms present before. He also recommends the following emulsion in place of the glycerin: 20 parts alcoholic iodoform, 180 parts of a 5 per cent. solution of gum arabic.

THE RADICAL CURE OF DIAPHRAGMATIC HERNIA.

SCHWARTZ and ROCHARD (*Rev. de Chir.*, 1892, No. 9) propose the following method of operation for the relief of strangulated herniæ in this region and its radical cure. The patient being placed on the right side upon a cushion, an incision either T, H, or U shaped is made over the ninth rib, a musculo-cutaneous flap is raised and the rib resected, with the deeper soft parts, the pleura incised. The lung ascends and the diaphragm and hernia are brought into view. This method places the surgeon in a position analogous to that in other hernial operations, and allows perfect antiseptic precautions, without the danger, in case of gangrene, of infecting the uninfected abdominal cavity. The condition after the sewing up of the external

wound is one of pneumothorax, which will disappear little by little, or if a pyo-pneumothorax supervene the wound for drainage is already made, and the removal of a few sutures is all that is required. The authors believe that in consideration of the desperate character of the patient's condition, and the greater dangers involved in a cœliotomy and the consequent infection of the peritoneal cavity, this operation gives an increased chance of success, though exposing the patient to a pneumothorax.

They do not recommend it in the case of hernias that are entirely anterior, and therefore easily operable by a cœliotomy. The same methods applicable to hernias in other situations are to be used here, as enteroplasty in case of gangrene of the intestine, or an analogous method in case the stomach is involved.

ABSCESS OF THE SPLEEN.

STALKER (Dundee) reports the case of a man who was seven years in the army and had had Malta fever and enteric fever. He enjoyed good health for two years subsequently. On admission to a hospital, after a fortnight's illness, he was suffering from pain in the left flank, with fever and splenic enlargement. The fever was of continued type, but latterly remittent without abatement of symptoms. He sank of pyæmic exhaustion at the end of five weeks. A general diagnosis of enteric fever was made, but there were puzzling symptoms throughout. There was a large splenic abscess containing about twenty ounces of pus. There was no ulceration of the bowel. —*Lancet*, 1892, No. 3607.

PROSTATECTOMY.

THE following new method in prostatectomy is described by TOBIN (*Medical Press*, September 21, 1892). After supra-pubic cystotomy has been performed, and the diagnosis of enlarged prostate confirmed, a straight urethral écraseur is passed *per urethram* until the point touches the prostate at the level at which it is desired to operate; the wire loop is then opened and made to encircle the portion to be removed, an incision being made with scissors if required; the loop is then kept imbedded by two fingers passed through the abdominal wound, and, guided by them and the écraseur, cuts in the plane desired. The lateral lobes may be removed in like manner, incisions being made if required for the passage of the loop. The author claims the following advantages for this method: "1. As much of the gland as interferes with the escape of urine is removed, and no more. 2. Such portion is removed in a satisfactory manner, for the wire cuts up to the portion where the instrument has been stopped by the obstruction. 3. A smooth surface sloping into the urethra is left, instead of the more or less rough one that must result from taking away the gland piecemeal with a forceps. 4. There is very little hemorrhage." He also recommends the Trendelenburg position, and reports a case of recovery with perfect function in the sphincter, and no re-obstruction after six months.

[It appears to me that this method is worthy of trial. Unfortunately, at the present day the majority of cases of prostatic disease brought by their

medical advisers to the operating surgeon are in such an advanced stage of toxæmia that shock and hemorrhage, even of mild grade, are greatly to be dreaded. The theoretical grounds for believing that shock would be diminished by a procedure which admits of the removal of only the obstructing portions of the gland and no more, and the bleeding lessened by the use of the *écraseur*, seem to be well taken.—J. W. W.]

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC;

CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE;

CLINICAL LECTURER ON OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE;

VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

HÆMATOMA OF THE STERNO-MASTOID MUSCLE IN THE NEWBORN.

In the *Journal of Pathology and Bacteriology*, 1892, vol. i., No. 1, SPENCER reports fifteen cases of hæmatoma of the sterno-mastoid muscle, and gives two excellent illustrations of microscopic sections from these cases. In nearly three hundred autopsies on the newborn, Spencer has met with hemorrhage into the sterno-mastoid muscle in fifteen cases. So far as the sex was concerned, males and females were affected with equal frequency. The muscles on either side were equally affected. Small and prematurely born children were especially liable to this accident. In fifteen cases, the presentation was either a breech or footling either before or after version. The forceps was used in two cases, and two occurred after spontaneous labor. In one of the latter, however, the head was delivered by pressure with the fingers through the rectum; and in the other, delivery was hastened, as hemorrhage occurred in the mother. The hemorrhage was found in the anterior portion of the upper two-thirds of the muscle, the color of the tumor being dark red, and its consistence firm. Microscopic examination of a transverse section shows the intra-fascicular connective tissue infiltrated with blood; under a high power the blood is seen effused in large amount between the fasciculi. The result of this accident is the formation of fibrous interlacing bands in the muscle, which may cause wry-neck.

THE PATHOLOGY AND PROGNOSIS OF ECLAMPSIA.

In the *Archiv für Gynäkologie*, 1892, Band xlii., Heft 3, DÜHRSEN wrote upon the treatment of eclampsia, basing his recommendations upon the study of some two hundred cases. In the same journal, Band xliii., Heft 1, he describes these cases in detail, and draws some interesting conclusions from

them. He regards the cause of eclampsia to be an intoxication of the blood occasioned by the retention of creatin and creatinin in the kidneys of the pregnant patient; less frequently by an actual nephritis accompanied by congestion of the kidneys, by accumulation of urine through pressure upon the ureters, and by hydro-nephrosis. The creatin and creatinin accumulate in the vessels of the cerebral cortex, producing convulsions by their irritation, and coma. The immediate cause of an outbreak of eclampsia is irritation of sensory nerves in the genital tract, or profound disturbance of the emotional centres. Eclampsia can also be produced by the products of bacteria, and especially when the kidneys are in a congested condition; in other cases, when infective material or bacteria cause extensive disintegration of the red blood-corpuscles, with fatty degeneration of the kidneys, heart muscle, and mucous membrane of the stomach. In the latter cases, fatal gastric hemorrhage may occur during eclampsia. Prolonged narcosis favors such degenerative changes. In a few cases eclampsia is purely reflex, and is occasioned by abnormal distention of the uterus, or any other violent irritation of the nerves of the genital tract. General susceptibility to nervous impulses may be also a cause, as is seen in very young or very old primiparæ. In an analogous way, the engorgement of the kidneys, producing what is known as the "kidney of pregnancy," results from a reflex contraction of the renal vessels, occasioned by irritation of the genital region.

The prognosis of eclampsia becomes grave in proportion to the number of convulsions; death may occur after but few convulsions from disintegration of the blood, cerebral hemorrhage, or fatty embolism. In 93.75 per cent. eclampsia ceases after the uterus has been emptied in profound narcosis. Mortality from eclampsia is less after operative emptying of the uterus than after spontaneous labor. The mortality of eclampsia will become still less if operative measures are instituted as soon as the attacks begin. Such should be the treatment at every period of pregnancy. In 80 per cent. of cases of eclampsia, the methods of incisions into the cervix and incisions into the peritoneum and vulva will enable the operator to terminate labor promptly. In 10 per cent. mechanical dilatation by traction upon a kolpeurynter, inserted within the uterus, and accompanied by dilatation by incision will result favorably. Under strict antiseptic precautions the method described, accompanied by the use of the uterine tampon in cases of atony, is no more dangerous than spontaneous labor. Cæsarean section is not indicated for eclampsia. Operative procedures increase the danger in eclamptic cases only when the narcosis is not a deep one. Prolonged narcosis to control convulsions is dangerous, as it favors the occurrence of broncho-pneumonia, increases the disintegration of red blood-corpuscles and the fatty degeneration of vital organs. In eclampsia, where the uterus is greatly distended, death sometimes follows the inhalation of a small amount of chloroform. In these cases, the membranes should be ruptured before the beginning of the narcosis. Chloral, when given internally, becomes chloroform in the blood, and the use of chloral occasions the same dangers that accompany chloroform. Large doses of morphine are also dangerous because of the fatty degeneration of the heart muscle which exists in these cases. Under the operative treatment of eclampsia the maternal mortality should lessen to 25 per cent., and that of viable children to 50 per cent.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

VAGINAL HYSTERECTOMY.

TERRIER and HARTMANN (*Revue de Chirurgie*, 1892, No. 4) draw the following deductions from thirty-six cases of vaginal extirpation: 1. Their mortality was 23 per cent. 2. They regard the operation as quite as justifiable as any operation for the complete removal of a malignant neoplasm, and no more dangerous. 3. Recurrence occurred in 70 per cent. of the cases, while the remaining 30 per cent. seemed to be permanently cured.

HYPERTROPHIC ENDOMETRITIS.

TREUB (*Centralblatt für Gynäkologie*, 1892, No. 42) properly emphasizes the fact, too little recognized, that this condition is not of inflammatory origin. It should be regarded as simply an hypertrophy of the endometrium, for reasons both anatomical and clinical. Anatomically it appears as an hypertrophy of either the glands or interstitial tissue, but infiltration with leukocytes is never observed unless a true endometritis coexists with the hypertrophy, when the latter will be found to be limited to the cervical mucosa.

Clinically, this condition of hypertrophy is never attended with inflammatory symptoms; menorrhagia, with rarely a profuse watery discharge, accompanied with more or less severe pain, being the only indications of an abnormal state of the endometrium. The fact that it is such a common accompaniment of subinvolution, retroflexion, fibro-myoma, and cancer of the cervix, shows that it is due purely to disturbances of circulation. It is never the primary result of infection.

MYOMOTOMY.

TIPJAKOFF (*Centralblatt für Gynäkologie*, 1892, No. 42) reports twelve successful cases of supra-vaginal amputation for fibro-myomata. He cures the uterine cavity the day before the operation, irrigates with tincture of iodine, and tampons the vagina with iodoform gauze, the latter being replaced just before operation. After removing the tumor, the cervical canal is disinfected with a 10 per cent. solution of carbolic acid, and the surface of the stump, after being trimmed out in the centre, is treated with iodoform and ether, after which its opposed surfaces are united with a continuous silk suture. Finally, the peritoneal flaps are united over the stump in such a way that the line of suture shall not lie directly over that of the stump. The rubber cord is only applied until the tumor is excised, the ovarian and uterine arteries having been previously ligated, when the cord is removed and the stump, after being treated as above described, is dropped back into the cavity.

TRACTION AS AN AID IN THE REMOVAL OF SOLID ABDOMINAL TUMORS.

REVERDIN (*Archives Provinciales de Chirurgie*, October, 1892) describes and figures an ingenious but somewhat complicated method of elevating large tumors during abdominal section, the principle being the same as that long practised in operations for elephantiasis of the scrotum. The apparatus is not unlike an ordinary hay-fork, such as is run by horse-power.

[One cannot avoid the conclusion that, however satisfactory the apparatus may be in the hands of its distinguished inventor, its use is opposed to an important principle in modern surgery—the simplification of technique. By placing the patient in Trendelenburg's posture one secures all and more than all the advantages claimed for the traction method.—H. C. C.]

THE ENUCLEATION OF INTRA-UTERINE FIBROIDS PER VAGINAM.

CHROBAK (*Sammlung klin. Vorträge*, No. 43) reports forty-three cases, with one death from hemorrhage. The tumors most capable of removal in this way are those growing from the cervix and those projecting into the uterine cavity. The uterus must be movable and the cervix dilatable. If several sub-peritoneal fibroids or diseased adnexa are present at the same time, celiotomy is preferable. The writer incises the cervix freely if necessary, sometimes ligating the uterine arteries or their lower branches beforehand. He insists that the tumor shall be removed at one sitting, even if the operation is prolonged. After removing the neoplasm he irrigates, and then tampons the uterine cavity with gauze.

THE ABDOMINAL ENUCLEATION OF UTERINE FIBRO-MYOMATA.

CHEVRIER (*Nouv. Arch. d'Obstétr. et de Gynécologie*; *Centralblatt für Gynäkologie*, 1892, No. 40) prefers this method of removing smaller tumors to myomectomy, believing that there is less hemorrhage, and that the uterine cavity is not opened. The objection that small tumors are overlooked when the entire uterus is not removed does not hold if careful examinations are made before and during the operation. The convalescence is usually rapid and easy. One hundred and twenty-five cases are reported, with a mortality of 16 per cent.

PELVIC TROUBLES DUE TO MOVABLE KIDNEY.

THIRIAR (*Centralblatt für Gynäkologie*, 1892, No. 42) thinks that movable kidney is more often the cause than the result of disturbances of the female genital organs. In many cases it is to be regarded as the cause of uterine displacements, oöphoritis, and salpingitis. He found movable kidney in 20 per cent. of his gynecological cases. In eleven patients who had been vari-ously treated by curettement and castration (in one instance vaginal hysterectomy having been performed) without benefit, he found a mobile kidney, and performed nephrorrhaphy in ten cases with entire relief of the symptoms. He explains the pelvic symptoms as due to the intimate anastomoses between the renal and ovarian nerves. Doubtless the movable kidney also compresses

the veins of the spermatic plexus, and in some instances the renal vein or even the vena cava.

[Since gynecologists have begun to direct their attention to the subject of movable kidney, one cannot avoid the suspicion that the frequency of the condition, its importance, and its intimate relation to pelvic troubles, have been somewhat exaggerated. Doubtless it is common in women, but less so than recent writers would have us believe. As for the relief afforded by nephrorrhaphy, it is well to remember, as Osler cautiously remarks, that "it does not always succeed."—H. C. C.]

PÆDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,

OF PHILADELPHIA;

ASSISTED BY

THOMPSON S. WESTCOTT, M.D.,

OF PHILADELPHIA.

THE RADICAL CURE OF INGUINAL HERNIA IN YOUNG INFANTS.

UNTIL quite recently the general teaching of systematic writers on the subject has been adverse to operating for the radical cure of hernia in very young children. Berger, for instance, basing his opinion upon the frequency of cure by the bandage, deprecated operation upon such subjects. More recent writers, however, have brought forward evidence to justify this operation without reference to the age of the child. FÉLIZET, in his thesis (1891), has reported a successful double operation upon a child of eight months, the interference being necessitated by the enormous size of the hernial tumors. BROCA (*Revue mens. des Maladies de l'Enfance*, April, 1892) does not hesitate to operate after the age of three years, and his seven observations show that the operation itself is not a grave one, and its results can be compared to those obtained in adults. Below the age of two years he does not think operation is justifiable, because the phenomena of strangulation are never grave, and, moreover, antisepsis is difficult to maintain. KAREWSKI (*Berliner klinische Wochenschrift*, March 18, 1891), however, thinks that scrotal hernias can be radically treated without danger, even in infants of the tenderest age. Of the nine children upon whom he thus operated, the youngest was nine months and the oldest two years and three months. In none of these cases did relapse occur, and all recovered without accident. The most recent report of cases comes from PHOCAS, of Lille (*Le Mercredi Médical*, 1892, No. 29, p. 341), who gives the notes of two operations, one upon a child of fifteen months; the other upon an infant of four months, both of which gave eminently successful results. This author puts himself in line with the operators already quoted; but he is disposed to believe the conditions changed when the radical operation is practised as the termination of a kelotomy for strangulated hernia, for in this case the tissues are infected and the child in a

depressed state; and he considers these facts as warrant for refraining from operation in case of strangulation in children under two years of age. Such a decision, moreover, seems justified by the fact, noted by all observers, that strangulation at this age is a relatively benign accident. In many cases simple taxis is sufficient, and sometimes the condition yields spontaneously. Nevertheless the diagnosis of strangulation is surrounded by so many difficulties in these very young subjects, that statistics have little weight. On the other hand, the existence of a hernia, which cannot be satisfactorily controlled by any of the palliative means, is a source of so much annoyance and suffering to the infant that measures for radical relief are, in many cases, peremptorily demanded. The operation promises better success, of course, when practised in the absence of strangulation, and the author would not hesitate to reduce a strangulated hernia by taxis, waiting for a more favorable time to attempt the radical cure. As a general rule he believes it to be sufficient to extirpate the peritoneo-vaginal canal, whose abnormal persistence is the sole cause of this hernial defect.

THE ANÆMIA OF HEREDITARY SYPHILIS.

JOHANN LOOS (*Wiener klinische Wochenschrift*, 1892, No. 20, p. 291) concludes a paper upon this subject with the following: Hereditary syphilis is always associated with an anæmia which, under some conditions, may reach an extreme degree of intensity. This anæmia is characterized by a diminution in the number of the red blood-corpuscles; by a quite marked alteration in these corpuscles; the appearance of megal- and microcytes; by the appearance of nucleated erythrocytes, sometimes in quite notable quantity. It is also characterized by the constant existence of a leukocytosis, which may often become extreme, and by the appearance of myelo-plaques in the blood. This anæmia is a very important and significant symptom of the disease, and may directly occasion a fatal issue.

There are only two diseases common to childhood in which the alterations of the blood suggest the changes above described, and these are splenic anæmia (the "anæmia infantum pseudo-leukæmica" of Von Jaksch) and forms of severe rhachitis.

CORRIGENDUM—The initials E. P. D. were unintentionally omitted from the review "Recent Obstetric Literature," pp. 705-707, December JOURNAL, 1892.

Note to Contributors.—All contributions intended for insertion in the Original Department of this Journal are only received *with the distinct understanding that they are contributed exclusively to this Journal.*

Contributions from the Continent of Europe and written in the French, German or Italian language, if on examination they are found desirable for this Journal, will be translated at its expense.

Liberal compensation is made for articles used. A limited number of reprints in pamphlet form, if desired, will be furnished to authors in lieu of compensation, *provided the request for them be written on the manuscript.*

All communications should be addressed to

DR. EDWARD P. DAVIS,
250 South 21st Street, Philadelphia.

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES.

FEBRUARY, 1893.

THE CHOLERA IN HAMBURG IN 1892.

By F. REICHE, M.D.,
RESIDENT PHYSICIAN IN THE NEW GENERAL HOSPITAL, HAMBURG-EPPENDORF;

TRANSLATED BY A. A. ESHNER, M.D.,
OF PHILADELPHIA.

THE most striking feature of the recent epidemic of cholera at Hamburg—the fifteenth from which the city has suffered since 1831—was its sudden, explosive beginning. There were not, as in previous epidemics, at first isolated cases of severe gastro-enteritis, to afford an opportunity of testing the resources of modern hygienic investigation in the recognition of the disease, the isolation of the patients, and the adoption of preventive and protective measures. Physicians, officials, and the community were first alarmed when a large number of cases appeared simultaneously in many widely-separated parts of the city. In this epidemic, in contrast with previous visitations, the low-lying districts of the harbor were not alone at first attacked.

To-day evidence is yet wanting as to the source of the first case. The manner in which the disease virus was introduced and the time at which the introduction occurred are still unknown. The city enters into commercial relations with all parts of the world. That the germ was not brought by way of the mainland would seem to be demonstrated by the fact that no cases occurred in any place situated between Hamburg and the two nearest countries in which cholera at the time prevailed, *i. e.*, France and Russia, before the outbreak of the epidemic in Hamburg

itself. Isolated cases that subsequently appeared in various parts of Germany, but which in no instance furnished the starting-point of an epidemic, could be traced to refugees from Hamburg. Whether the germ of the disease was brought by ships from Havre or from the Black Sea is not known; general opinion, however, inclines to the latter-named source, and in particular to Baku, whence the scourge had from the early part of June pursued its way northwestward over Russia to St. Petersburg. The suspicion, at first largely entertained, that Russian emigrants, of whom there were at the time large numbers passing through the city on their way to England and America, acted as carriers of the disease, was found to be entirely unsupported.

Although the portal of entry of the disease remains unknown, there is substantial evidence in explanation of its peculiar mode of extension. The simultaneous invasion at the beginning of the epidemic of parts of the city widely separated from one another, but especially the limitation of the epidemic within comparatively sharp lines, separating Hamburg from the neighboring cities of Waldek and Altona, which were exposed to the same conditions of air, and probably, also, of soil, but each of which has its own separate water supply, leads to the inference that the common water supply of the city is to be looked upon as the principal channel of dissemination of the germs of the disease.

The city receives its supply of water, unfiltered, directly from the river Elbe, at a point just above its extensive harbor. The danger implied by this fact becomes the greater when it is added that the sewage of the densely populated city is poured into this stream, and that the ebb and flow of the North Sea are perceptible at the source of supply. Waldek receives its drinking-water from an inland sea, while Altona derives its supply from the Elbe below Hamburg, but subjects it to a process of purification by a method of sand-filtration that has been in operation for many years. The water supply of Hamburg has thus been entirely inadequate and in the highest degree dangerous, furnishing conditions the most favorable for the existence of vegetable and animal life,¹ while the interior of the water-distributing pipes is lined with a heavy deposit of organic matter. An additional factor favorable to the development of the disease germs, *i. e.*, the comma bacilli, assuming their presence and constant renewal in the pipes of the water supply, is the existence of reservoirs with which, by municipal decree, all houses must be provided, as a precaution in case of fire, in order to equalize variations in pressure in the water supply and to facilitate a uniform distribution of the water from a central source. The reservoirs were often cleansed but carelessly and sometimes not at

¹ K. Kraepelin: "Die Fauna der Hamburger Wasserleitung," Abhandlungen des Naturwissenschaftlichen Vereins in Hamburg, ix. 1.

all, and the slimy deposit that formed at the bottom furnished a most favorable soil for the development of microorganisms of all kinds. Too much reliance was placed upon filtration of the water, which was practised in most households, even among the poorer class.

In the disposition to the occurrence of local epidemics thus created, those that seek in the water supply alone the conditions for the propagation of the disease would find the most important factor in explanation of the invasion of certain stories and certain houses of the same street, with the escape of others. It goes without saying that other influences, such as an irregular mode of living, lack of cleanliness, a failure to carry out the preventive and protective measures recommended, as well as crowding amid unfavorable hygienic conditions, entered into the determination of an attack. These must be considered in every epidemic in every city, and do not apply, as do the other factors, specifically to Hamburg. One other point must not escape mention, and that is the large number of crooked, dirty, densely populated streets peculiar to Hamburg.

All attempts to demonstrate unequivocally, by plating methods, the presence of comma bacilli in the water of either the general supply or the house reservoirs failed. This fact cannot be urged as an argument against the spread of the disease by way of the water supply, in view of the difficulty of detecting cholera bacilli in water. It seems to have been by a peculiar and unfortunate chain of circumstances that the disease germ found its way into the city just at a time at which the splendid new water-works that have for a number of years been in process of construction are approaching completion, which will in future provide water clarified and purified by a process of sand-filtration, and will at the same time permit the source of supply to be transferred to a point higher up the stream.

The extent to which those conditions of timely and local disposition, to which so much importance has been attached as a result of the epidemiologic studies of Pettenkofer, enter into the etiology of this severe and sudden epidemic cannot yet be determined. Conjecture is here given greatest rein, especially as the actual date of the first infection remains unknown, and also, in consequence, the length of time during which the virus remained latent or its presence was unattended with evil.

Mild attacks of diarrhoea, differing in no respects from the attacks of summer diarrhoea commonly observed every year, were of frequent occurrence in the weeks preceding the outbreak of the epidemic. As a matter of fact, during this time meteorologic conditions prevailed that, according to all previous experience, were most favorable to the spread of cholera, and that besides were extremely rare at and in the neighborhood of Hamburg. The weather of Hamburg, lying as the city does

between the North Sea and the East Sea, is generally variable, damp, and, even in midsummer, is seldom very hot; but in the second half of August, 1892, the weather for several days in succession was extremely sultry, with a clear sky and mild southerly and westerly winds. The few thunderstorms that occurred brought no relief. Between August 17th and 24th the temperature rose almost daily above 87.8° F. In conjunction with these conditions the water in the Elbe sank to a low level, and the ground-water level also fell. During the preceding months the precipitation had been unusually slight.

In consequence of the heat—perhaps, also, as a result of the presence at this time of an unusual proportion of salt in the water of the Elbe and in the drinking-water—many forms of animal life present in the water-pipes succumbed (Dr. Ahlborn); the otherwise sessile bryozoa were detached in large numbers, and, dying, furnished a favorable soil for the multiplication of germs of all kinds. A permanent decline in the temperature took place in the last days of August.

To what extent, in addition to the factors already considered, local disposition entered into the invasion of individual portions of the city will be discussed more fully later on. The conditions at Hamburg are not encouraging to a study of this kind; the city lies in part upon high, dry soil, and in part upon damp, marshy land. No final conclusion is to be based upon the fact that the proportionately larger number of cases occurred within the latter-named area, as it is largely populated by the poorer portion of the community.

Turning now to the course of the epidemic, it will be seen that the number of cases pursues a rapidly ascending line, with a moderately sharp decline, the highest point being reached on August 27th. Early in November three more cases were reported.

The population of the city may be estimated at 600,000 inhabitants. In the table 85 cases are recorded as having occurred before August 21st; these probably all occurred after August 15th.

It devolved upon the hospitals to make the diagnosis. A case admitted to the New General Hospital on the evening of August 16th, with pronounced symptoms of cholera, died on August 17th, and a post-mortem examination was made on August 18th. Immediate examination of the intestinal contents failed to afford positive evidence. This was, however, furnished subsequently by the plating process. In the second case, also admitted to the New General Hospital, and in which the post-mortem examination was made on August 22d, Dr. Eugene Fraenkel was able in the course of the autopsy, from an examination of the intestinal contents, to make an unequivocal diagnosis of Asiatic cholera. The diagnosis had been made with equal certainty in the Old General Hospital on August 21st, and in the course of the same day a considerable number of cases were admitted to this institution.

	Cases.	Deaths.		Cases.	Deaths.
Up to August 20 . . .	85	36	September 25 . . .	95	39
August 21 . . .	83	22	“ 26 . . .	77	33
“ 22 . . .	200	70	“ 27 . . .	82	33
“ 23 . . .	272	111	“ 28 . . .	75	23
“ 24 . . .	365	114	“ 29 . . .	49	20
“ 25 . . .	671	192	“ 30 . . .	58	16
“ 26 . . .	995	317	October 1 . . .	36	16
“ 27 . . .	1102	455	Sixth week . . .	472	180
First week . . .	3773	1317	October 2 . . .	33	9
August 28 . . .	1028	428	“ 3 . . .	39	7
“ 29 . . .	980	393	“ 4 . . .	30	12
“ 30 . . .	1081	484	“ 5 . . .	21	6
“ 31 . . .	857	395	“ 6 . . .	20	4
September 1 . . .	842	394	“ 7 . . .	13	4
“ 2 . . .	810	479	“ 8 . . .	14	4
“ 3 . . .	780	440	Seventh week . . .	170	46
Second week . . .	6378	3013	October 9 . . .	11	6
September 4 . . .	679	293	“ 10 . . .	8	1
“ 5 . . .	580	282	“ 11 . . .	14	1
“ 6 . . .	490	258	“ 12 . . .	8	6
“ 7 . . .	422	225	“ 13 . . .	12	1
“ 8 . . .	350	157	“ 14 . . .	12	6
“ 9 . . .	402	155	“ 15 . . .	6	4
“ 10 . . .	439	178	Eighth week . . .	71	25
Third week . . .	3362	1548	October 16 . . .	5	1
September 11 . . .	354	150	“ 17 . . .	6	2
“ 12 . . .	384	142	“ 18 . . .	3	1
“ 13 . . .	293	129	“ 19 . . .	3	...
“ 14 . . .	313	103	“ 20 . . .	1	3
“ 15 . . .	314	141	“ 21 . . .	3	...
“ 16 . . .	397	141	“ 22 . . .	3	...
“ 17 . . .	338	117	Ninth week . . .	24	7
Fourth week . . .	2393	923	October 23 . . .	2	2
September 18 . . .	222	110	“ 24 . . .	...	...
“ 19 . . .	234	110	“ 25 . . .	...	1
“ 20 . . .	217	87	“ 26 . . .	...	...
“ 21 . . .	198	79	“ 27 . . .	...	1
“ 22 . . .	172	55	“ 28 . . .	...	...
“ 23 . . .	158	67	“ 29 . . .	...	...
“ 24 . . .	126	39	Tenth week . . .	2	4
Fifth week . . .	1327	547	Totals . . .	17,972	7610

The municipal authorities were apprised of the facts on August 22d ; on August 23d a proclamation was issued to the people, together with information as to the means of protection and prevention to be adopted ;

a short time later the schools and the river-baths were closed, and careful supervision of railway intercourse was instituted. Life in the harbor languished.

Both the New General Hospital and the Old General Hospital at once made provision for the reception of patients. The New General Hospital is situated in the suburbs of the city, having been erected a few years ago upon the pavilion system. It is well equipped, and generally accommodates 1600 patients. The Old General Hospital is a large building, constructed upon the corridor system, and possesses even a larger number of beds than the New General Hospital. Behind the New General Hospital stood six barracks, each provided with twenty beds, and its own commissary service and drug-store, in anticipation of an epidemic. These beds were rapidly filled, and additional room had soon to be secured. Convalescents were dismissed from the hospitals; those most ill were crowded into a few pavilions or wards; several small hospitals in the city and a number of dwellings rented for the purpose were prepared for the reception of patients not suffering with cholera.

Throughout the entire epidemic, notwithstanding the great demands made in the course of a few days upon the administrative and executive officers, upon the commissary department and upon the physicians, not a single patient was refused admission to the hospitals on account of want of room; and at no time was there any real difficulty in making provision for all that were admitted. Up to August 28, 29, and 30, when the tide of the epidemic began to ebb, it was at all times possible to find new room, to furnish clean beds and fresh linen, and with the aid of faithful assistants to provide well and promptly for patients, and to insure cleanliness and good and efficient nursing. Minor obstacles that occasionally arose are not worthy of consideration. By way of illustration: on September 2 there were in the Old General Hospital 1062 cases, and in the New General Hospital 1024.

Not before the first of September were barracks erected in various parts of the city: in the gardens about the Old General Hospital; in the harbor in connection with the Seamen's Hospital; and in the eastern and western parts of the city. On August 30th a schoolhouse, prepared in the course of twenty-four hours for the reception of 80 patients, was opened in the southeastern part of the city and placed under my charge. A field-hospital, with a capacity of 500 beds, furnished by the Minister of War, was erected adjacent to the New General Hospital, and close to this, on September 15, a barracks with a capacity of 250 beds was additionally provided. Physicians, nurses, and assistants had come from all parts of the German Empire with proffers of aid.

The ambulance service was somewhat more tardy in systematic organization. It was necessary to transport patients to the hospitals simultaneously from all parts of the city, at the remotest distances.

Notwithstanding the large number of conveyances impressed into this service, some little difficulty was at first experienced on account of the enormous number requiring transportation. The common transportation at one time of several cases of varying degrees of intensity was a not infrequent occurrence in the first few weeks of the epidemic. The system of transportation was directed from a central station, for only thus could it have been possible to direct the stream of patients to the one or the other of the two receiving hospitals, so that the other might meanwhile be afforded a few hours for rest, recuperation, and renewed preparation.

Sanitary stations were established in twenty different portions of the city, and in these were placed physicians whose duty it was to furnish first aid. Each station was provided with a disinfecting oven, by means of which wearing apparel, linen, and bed-clothing were sterilized in a current of steam. From these stations persons were deputed to visit the houses in which cases of cholera occurred, for the purpose of disinfecting the stools and the furniture, and to protect the remaining members of the family from infection. Disinfectants were gratuitously distributed among the people.

Burials took place directly from the hospitals or from provisional pavilions especially constructed for the purpose. Huge graves were dug in the Central Cemetery. In this connection there was some little difficulty at the height of the epidemic.

Among other measures adopted in the course of the epidemic was the sending through all the streets of wagons dispensing boiled or spring water; the boring of artesian wells; the cleaning of certain especially unhygienic quarters of the city; the organization of aid societies by the citizens, and the collection of moneys for the support of impoverished families.

The population maintained a praiseworthy calmness; readiness of aid and willingness of sacrifice characterized all classes.

As to the disease itself: a preponderance of severe cases at the beginning of the epidemic, with a moderation in severity as the mortality rate declined, was a marked feature of this epidemic, as it has been of previous extensive ones.

Two features characterized this epidemic in contrast with the majority of others: the absence of febrile temperature early in the attack and the conspicuously frequent absence of all prodromal symptoms, particularly the premonitory diarrhœa. Observations bearing upon the temperature were made in comparatively few cases; but neither I nor others, so far as I have been able to learn, observed in the algid stage greater differences between the temperature of the axilla and that of the rectum than are at all times present.

In the majority of cases, thus, the disease set in abruptly and at once assumed its full intensity, so that frequently, and particularly at the begin-

ning of the epidemic, profound collapse, with diarrhoea and cramps in the calves of the legs, speedily followed the initial vomiting. Cases of fulminant cholera sicca were common at this time. Individuals would be stricken upon the street, while at work, or during a meal.

The clinical picture presented by the disease did not differ from that presented in previous epidemics. A secondary febrile period, or so-called reaction, lasting from a few days to two weeks, appeared in the train of many cases of marked and of moderate severity, often without noteworthy disturbance of the general condition; but in a smaller proportion of cases, with more or less well-marked typhoid manifestations.

In isolated cases the spleen was found to be enlarged. In many cases of grave type the algid or asphyctic stage was followed by a profound and almost always lethal sopor, in many respects resembling the coma of uræmia, from which, however, it differed in the absence of all convulsive manifestations. In the cases under my observation the pupils were, under these circumstances, always contracted; œdema was absent; frequently there was marked restlessness; the pulse was tense and slow; the cheeks often presented a vivid blush. No changes were found in the few cases in which the eye-ground was examined (Dr. Moritz).

The urinary secretion was in part suppressed, in part represented by a fluid of low specific gravity and which had to be removed by means of the catheter. In the algid stage the anuria was typical; the resumption of the renal function constituted a good, though not absolutely favorable prognostic indication. The first urine passed contained for a short time albumin in varying proportion, together with hyaline tube-casts, epithelial cells, colorless and isolated red blood-corpuscles. Persistent albuminuria, with other symptoms of chronic nephritis, was extremely rare; it was present in none of the 376 cases under my care. Reducing substances were, however, sometimes present in the urine passed shortly after the algid stage.

Cutaneous eruptions were relatively common; they mostly resembled the exanthems of measles and urticaria, and were often attended with slight extravasations of blood, so that yellowish spots remained for several days after the disappearance of the eruption; only rarely were they distinctly hemorrhagic, taking the form of petechiæ. They appeared at variable periods in the course of the attack, involved trunk and extremities and were attended with but little itching; their appearance was not associated with any elevation of temperature, and they furnished no prognostic indication.

The temperature likewise afforded no guide in prognosis. Recovery took place in some cases in which the temperature had fallen as low as 93° F.

The stools were flocculent, at times resembling rice-water, at other

times stained yellowish; in elderly persons in particular, admixture of blood was common.

Metrorrhagia was frequently observed in women; abortion or premature labor was common in pregnant women. Advanced pregnancy and chronic alcoholism were most unfavorable complications.

True fibrinous pneumonia was encountered but exceptionally, and then unattended with febrile movement. Lobular pneumonia was infrequent; as was also the association with enteric fever and with scarlatina. Diphtheric and septic complications were likewise uncommon.

Full and careful statistics, in course of preparation by Professor Rumpf, Director of Hospitals, will shortly be published, and may be expected to illumine many of these associations and other interesting points.

From a therapeutic point of view the recent epidemic is remarkable for the fact that intravenous infusion was for the first time practised on a most extensive scale in many hundreds of cases, being not infrequently repeated a number of times in a single case. Besides this, subcutaneous infusion had warm advocates. Landois's method of centripetal arterial infusion was practised alone by Dr. Schede. When it is considered that these various procedures were employed only in the severest cases, the estimated percentage of recoveries (25 per cent.) will appear a fair one.

A 0.6 per cent. solution of sodium chloride was the one most commonly employed; at times a 0.1 per cent. solution of hydrogen dioxide (Dr. Rumpf) was used; less commonly mild antiseptics, such as thymol (Dr. Heinleth), were added to the solutions; in a number of cases slow infusion was conjoined with sweat-baths (Dr. Zippel). The volume of fluid infused varied from two to four pints; the temperature preferably 104° F. Unpleasant complications were not encountered; inflammation at the site of puncture, as well as septic embolism, in consequence of imperfect sterilization of the solutions and apparatus employed, was extremely rare. The immediate result of the infusion was always striking, as a matter of course frequently of but brief duration; renewed vomiting and renewed diarrhœa being followed by a reproduction of the cyanosis, the pulselessness, the dry tongue and the vox cholericæ that had but disappeared.

Of other symptomatic measures hot baths proved efficacious in counteracting the cramps. Enteroclysis, by means of solutions of tannic acid after the method of Cantani, was in some cases attended with remarkable results.

Salol, which was universally used early in the epidemic, proved distinctly not of avail, given either by the mouth or injected beneath the skin in ethereal solution.

Calomel again earned much confidence for itself, and, given frequently

in minute doses (gr. $\frac{1}{60}$) or less frequently in larger doses (gr. jss,) often favorably modified the course of the disease.

The other intestinal antiseptics were all soon abandoned. Opium suffered a similar fate; given internally it seemed to do harm; in a small number of cases, given subcutaneously in aqueous solution in small doses, before the occurrence of collapse, it appeared to exert a favorable influence. For the vomiting, cocaine and chloroform, as well as irrigation of the stomach, were frequently employed, with satisfactory results.

When coma had developed (and its occurrence was not prevented by the infusions), all therapeutic measures, including sweat-baths, venesection, infusions, diuretics proved fruitless.

The treatment instituted in the algid stage by Prof. E. Klebs, by means of subcutaneous injections of anticholerin, a metabolic product of bacterial activity like tuberculocidin, and obtained from pure cultures of cholera-bacilli, is worthy of mention, and encourages the hope of further progress upon the same lines. The injection was followed by an elevation of the temperature during the attack, and a subsequent secondary febrile stage failed to appear. The proportion of recoveries is not at all unfavorable, but the number of cases treated with anticholerin is entirely too small for reliable conclusions to be arrived at.

Of fluids, much coffee, tea, and weak hydrochloric acid lemonade were given; carbonated waters seemed to induce vomiting. Ice was well borne; so also was oatmeal gruel with red wine. Injections of oil of camphor were almost universally employed as a stimulant.

The total mortality in the New General Hospital exceeded 50 per cent. The number of cases received into the various hospitals may be estimated as greater than 8000.

What has been said in the preceding has been drawn largely from observations made in the New General Hospital and in the infirmary under my care. In the remarks that follow upon the anatomic features of the epidemic the experience of the New General Hospital will be detailed. In this hospital 516 post-mortem examinations were made by the prosector, Dr. Fraenkel, together with his assistant, Dr. Deycke; in many cases only the abdominal viscera were examined.

In all cases the renal lesions described in previous epidemics (Griesinger, Cohnheim, Klebs) were found. These consisted in destruction of the secreting epithelium, particularly in the convoluted tubules, appearing at first as an acute swelling, and later as a direct disintegration and destruction of the protoplasm, as a result of which, in contrast with the conditions present in cases of coagulation-necrosis, the nuclei were well preserved. Macroscopically, the enlarged kidney presented a characteristic reddish-brown tint. In no case were there evidences of a productive inflammation. These changes appeared as early as a

few hours after the onset of the disease; in cases in which the attack was farther advanced many casts were found in the lumen of the uriniferous tubules. In a not inconsiderable number of cases, but never before the end of the first week, extensive fatty degeneration of the parenchyma of the kidneys was found; the organs were large and yellow, the dark bluish-red medullary substance presenting a marked contrast to the yellow cortex. Microscopically the epithelium was found to be in a condition of profound fatty degeneration, with the presence of large oil-globules, and bearing the closest resemblance to the changes found in cases of phosphorus poisoning.

The conditions found in the bowel corresponded with those that had already been described—death of the superficial epithelium, often with necrosis of the villi, and the penetration of the characteristic bacilli into the villous structures and the lumen of the follicles of Lieberkühn. The destruction of the epithelium was evident in examinations made as soon after death as possible, and was clearly a vital and not a cadaveric change. A well-marked diphtheritic process in the bowel was of less common occurrence.

Hemorrhagic infarction of the endometrium was observed in 65 per cent. of post-mortem examinations of adult women. In a number of these cases there was also hemorrhage into the stroma of the ovaries. A diphtheritic process was rarely found in the vagina, and still more rarely in the bladder.

In isolated cases degenerative processes were found in the muscles of the larynx and in the diaphragm (Dr. Boltz). Regressive changes were never found in the liver, though frequently in the heart muscle. Hemorrhages into the medullary tissue of bone appeared to be characteristic of recent cases.

Comma bacilli could not in any case be cultivated from the blood of internal organs, with the exception of the intestine. In one case in which the wall of the stomach presented superficial necrosis, invasion by typical bacilli was demonstrable.

Comma bacilli were looked for in all cases; as also in the many post-mortem examinations made by Dr. Simmonds at the old German Hospital—for the first time upon so large a scale in Europe. The conclusions of Koch were again confirmed throughout their entire range. In fatal cases the specific bacilli were found present in the intestinal contents until the eighteenth day of the disease; on the other hand, in some cases comma bacilli could no longer be found at a comparatively early date. From a study of their behavior in cultures in milk and in gelatin of varying degrees of alkalinity, E. Fraenkel¹ succeeded in demonstrating certain new biological peculiarities of the cholera bacillus. As the

¹ Dr. Eugene Fraenkel, *Deutsche medicin. Wochenschr.*, 1892, No. 46, p. 1047.

epidemic began to subside it became possible to pursue the bacteriological diagnosis also clinically; in the last weeks of the epidemic this procedure was adopted in every case, both within the hospitals and without.

On account of the great demands made upon the time and resources of the physicians, it was not possible to study bacteriologically the large number of cases of mild and transient intestinal derangement that were particularly numerous at the beginning of the epidemic. That such cases are etiologically instances of cholera, as numerous clinical observations in this and in other epidemics would lead one to surmise, has already been demonstrated by Cantani¹ by the detection of cholera bacilli in the stools. This observation was confirmed in some cases at Hamburg and in some at Berlin.²

Most extensive investigations in this direction during an epidemic of cholera would have been necessary to have enlarged the range of our views concerning the specific infections, and to have furnished grounds for a positive conclusion as to the part played by the individual disposition to a definite and well-known disease poison. This important factor, in its intimate nature unexplained and unknown though it may be, cannot be ignored in any consideration of the doctrine of the contagiousness of certain bacteria.

A CASE OF CONGENITAL ELEPHANTIASIS OF THE SCALP.

BY PEDRO S. DE MAGALHAES, M.D.,
PROFESSOR OF THE FACULTY OF MEDICINE, RIO DE JANEIRO

COMMUNICATED BY PATRICK MANSON, M.D.,
OF LONDON.

CARE should be taken to avoid confounding in one and the same nosographical species all the various forms of elephantiasis; it is an error which has been committed by several observers, to try to generalize under the same scientific conception, in virtue of their etiology, all the forms of this morbid process.

It is certainly unreasonable to deny the causal influence of filariasis in the production of the endemic elephantiasis of warm countries because of the non-parasitic nature of certain analogous sporadic forms which are met with everywhere. But it seems to me equally gratuitous to suppose that every case and kind of elephantiasis occurring in warm countries has a parasitic origin.

¹ Berliner klin. Wochenschr., 1892, No. 37, p. 914.

² Ibid., No. 39, p. 972.

Contrary to what has been lately advanced by Dr. V. Gunson Thorpe,¹ R.N., and Surgeon-Major Lamprey,² *a propos* of a very remarkable case of dermatolysis of the scalp observed by the latter author at Sierra Leone, I do not believe that the hypothesis of a cause-and-effect relationship with any of the three species of filarial hæmatozoa of the negroes of the coast of Africa has been verified in similar cases.

Indeed, the form of elephantiasis described and skilfully figured by Surgeon-Major Lamprey is connected distinctly with the species of congenital elephantiasis, or of the elephantiasis of early infancy—which is really dependent on a congenital origin. The coexistence in the same individual of numerous cutaneous fibromas bears out the relationship of the affection observed in the scalp with the well-known fibroma of the skin diathesis.

The coexistence of congenital elephantiasis with multiple cutaneous fibromata, as also, indeed, the combination of the affection with multiple nævi, are established facts. Striking examples of the first class of cases are afforded by the observations of Billroth and Virchow, and of the second by the observation of Esmarch.³

The localization of congenital elephantiasis in the scalp is, however, sufficiently rare to justify me in adding a fresh case to those already recorded in the archives of science, of which that observed by Surgeon-Major Lamprey is one of the most remarkable.

This form of cutaneous hypertrophy, called "dermatolysis" by Alibert, "pachydermatocele" by Mott, and described by German writers under the name "Lappenelephantiasis," is sometimes associated with a deformity of the subjacent cranial bones, and sometimes it is not so accompanied. In the case observed and described by Alibert the pathological alteration of the cranial bones was evident.

The large number of surgical operations—twenty—which Prof. Billroth found necessary to remove incompletely the deformity induced by this affection in one of his patients, shows the difficulty there is in removing such growths on the head when they have acquired very large dimensions.

The patient of whom the likeness is reproduced in the accompanying figure was a native of S. Sebastio, in the State of S. Paulo (ancient province of the same name), Brazil. He was over twenty years of age when I first saw him, now more than twelve years ago; of the negro race, slightly mixed with white blood; he said he had carried his disease from earliest infancy. Although the pathological condition seemed to have existed at birth, its development had made slow but steady progress up to the time of my seeing it. The lateral half of the cranial vault

¹ British Medical Journal, February 6, 1892, pp. 305, 306.

² Ibid., January 23, 1892, pp. 173, 174.

³ v. Esmarch und Kulenkampff: Elephantiasis.

FIG. 1.



FIG. 2.



corresponding to the elephantiasis was manifestly deformed, and the deformity could be traced as far as the arch of the zygoma. I could not assess the influence the weight of the mass of elephantiasis had had in the production of the osseous changes; however, this influence appeared to me to have been very positive. The hairs growing from the elephantiasised skin were many of them defective in pigment and in a state of canities, or, rather, of albinism, contrasting with the black color of the larger part of the woolly hair of the patient. The fold of hypertrophied skin could be lifted up, gliding smoothly over the subjacent parts; left to itself again it fell down by the side of the neck. In order to hide the hideous deformity as much as possible, the patient was in the habit of wearing his felt hat well cocked over on to the side of the tumor.

He had come to Rio de Janeiro with the intention of being operated on for his deformity, and he showed himself to several surgeons of the town and hospitals. Having been advised several times against surgical interference, on account of possible dangers, he became alarmed, and, changing his mind, returned to his own country in the same state as he left it.

RIO DE JANEIRO, September, 1892.

THE PRODUCTION OF THE FIRST CARDIAC SOUND IN MITRAL STENOSIS.

BY W. SOLTAU FENWICK, M.D. LOND., M.R.C.P.,

PHYSICIAN TO OUT-PATIENTS AT THE EVELINA HOSPITAL FOR SICK CHILDREN; MEDICAL TUTOR
TO THE LONDON HOSPITAL;

AND

WALKER OVEREND, B.A., B.Sc.,

LATE RADCLIFFE TRAVELLING FELLOW, OXFORD.

SEVERAL theories have been put forward to explain the production of the sudden and abrupt termination characteristic of the true presystolic murmur. Dr. Sitra¹ ascribed its causation to the collision of the mitral valve segments by surfaces instead of by edges. Dr. Broadbent² thinks the peculiar modification has its origin in the walls of the left ventricle, the determining cause being the imperfect distention of its cavity, and an absence of resistance at the beginning of the systole. Dr. Dickinson³ thought that the snap which immediately follows the presystolic murmur, occurs toward the end of the systole, that it is coincident with the carotid

¹ Hayden: Diseases of Heart and Aorta, 1875, p. 908.

² JOURNAL OF THE MEDICAL SCIENCES, 1886, p 68.

³ "On the Presystolic Murmur," *Lancet*, October 1, 1887.

beat, and is occasioned by the closure of the mitral flaps. According to Dr. Acland,¹ the snap-like sound occurs at the commencement of ventricular systole, and is due to the increased rapidity of the ventricular contraction, coupled with increased sharpness of closure on the part of the tricuspid valve, and, at times, also of the mitral valve. Strümpell² tries to explain it by the theory that the difference between the abnormally slight tension of the mitral valve in diastole and its high tension in systole is relatively great. Professor Cantalamessa,³ of Bologna, supports the latter view, when he states that in mitral stenosis, owing to the negative pressure in the left ventricle, the valves are at first extremely relaxed and then suddenly stretched, thus producing a sharp and sudden first sound.

It is evident, then, that the consensus of opinion places the seat of production of this intensified first sound in the left ventricle, although the various views differ as to the exact mechanism called into play. The discordance on this point clearly demonstrates that some doubt still remains as to its interpretation. It would, therefore, be profitable to ask ourselves two questions: first, whether there is a sufficiency of evidence to prove that the so-called "snap" is actually produced in the left ventricle, either by the contraction of the muscular fibres, or by a sudden tightening of the valvular flaps; and secondly, should the evidence prove inadequate, if there is not some other factor which is able to produce the same sound with equal facility and greater probability.

Now the sound in question, as we shall see later, is heard most plainly at the apex, or slightly to the right of it, and in period of time coincides with the first cardiac sound. It is also agreed that, in those cases where stenosis is associated with regurgitation, the systolic bruit appears to tail off from the abrupt finish of the presystolic.

None of these facts, or those advanced by Cantalamessa, appear to us sufficient to locate the sound in question in the left ventricle. In the first place, in cases of uncomplicated mitral stenosis, the left ventricle is generally in a state of atrophy, and the apex beat is formed more or less completely by the right ventricle, the walls of which have a progressive tendency toward hypertrophy; hence, in mitral stenosis, the maximum of intensity of the sound is, in reality, situated over the apex of the right ventricle. Secondly, the objections to the view that attributes the actual cause of the modified sound to the tension and vibration of the mitral curtains, lie in the fact that the left ventricle is particularly small, its walls proportionately thin; and as against Cantalamessa's view, the fact that the negative pressure in such a ventricle must become of less and less importance. But this is not all. Anyone who has watched such

¹ *Lancet*, July 20 and 27, 1889.

² *A Text-book of Medicine*, p. 267.

³ *La Riforma Medica*, May 5, 1891.

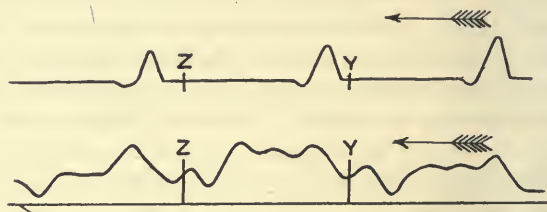
cases to their termination, must have found it somewhat difficult to believe that the mitral flaps, which after death appear shrunken, rigid and stiff, adherent, and often welded together into the form of a diaphragm, in which the auriculo-ventricular orifice appears as a mere slit, can possibly vibrate under any circumstances so as to produce the loud sound at present under discussion, especially when we know that these cases are often associated with an abnormally feeble action of the ventricle. On the other hand, there is no doubt that the accentuated first sound of mitral stenosis is really of a valvular nature. Professor Haycraft¹ has recently investigated the cardiac sounds anew, and demonstrated the fallacies of previous investigators. He shows most conclusively that the first sound of the heart is composed of two factors, of which the valvular one is the higher in pitch, and is the more important. Moreover, it is obvious that the tightening of the auriculo-ventricular valves must produce a sonorous vibration, since we know that it is the vibration of the semilunar valves that produces the normal second sound. The first sound, however, is accompanied by resonance tones of the chest, the stethoscope, and ear, produced by the shock of the contracting ventricle; and this is the sound heard in cases of bloodless hearts still beating. It is probable, therefore, that the intensified, somewhat high-pitched first sound in mitral stenosis is of purely valvular origin. Thirdly, in those cases where regurgitation is associated with a contracted mitral orifice, the systolic bruit appears to tail off from the sudden termination of the presystolic murmur, and the question arises, Is the "snap" coincident in time with the commencement of the regurgitant murmur? for, if this were the case, we find ourselves in the paradoxical position of attributing its production to the closure and vibration of the cusps of the mitral valve, which, at the same instant, are giving rise to regurgitation, *and therefore do not close at all*. As this is an important question, we have spent considerable time in endeavoring to accurately time the commencement of the systolic murmur, as well as the sound itself, on the cardiogram. The method employed was the same which we used to determine the rhythm of the presystolic murmur, and which was fully described in an article upon that subject.²

The annexed tracing was taken from a case of mitral stenosis in which the presystolic bruit was loud and rumbling with a pronounced first sound, from which, when listening at the apex, a soft systolic bruit appeared to commence. An inch to the left of the apex beat the snap was inaudible, but here the commencement of the systolic murmur was quite distinct. We timed the occurrence of the "snap" by listening slightly to the right of the apex, and then repeated the same experiment

¹ Journal of Physiology, 1890, vol. xi. p. 486.

² Lancet, October 26, 1889.

with the systolic bruit on the left of the apex. On comparing the two tracings, we found that in each case, both the "snap" and the commencement of the systolic murmur occur immediately after the ventricle commences its contraction, that is, just after the beginning of the up-stroke of the cardiogram. In other words, *the two are themselves simultaneous in time.*



The lower tracing represents the cardiogram of mitral stenosis. On the upper tracing the elevations mark the time of the accentuated first sound; *y y, z z* are corresponding points.

We must insist, therefore, that the evidence in favor of the production of the snap-like first sound in the left ventricle is not only insufficient, but actually contradictory, and at the same time draw attention to another agent which, in our opinion, is both competent to produce the phenomenon, and is also supported by some amount of clinical evidence. We mean *the closure and tightening of the tricuspid valve.* The reasons for this conclusion are shortly as follows:

1. The character of the first sound denotes that it is of valvular origin. For its production, we should theoretically require thin vibratile valves, and a somewhat high tension in the ventricle. These requirements, though absent in the *left* ventricle, are conspicuously present in the *right*. The tension in the right ventricle is augmented from the first, and is kept up by the tendency to hypertrophy of its walls; while the character of the snap-like sound is just such as might be expected to emanate from the sudden tension and vibration of the three membranous and loosely attached flaps of the tricuspid valve.

2. In point of time we have shown that the sound is synchronous with the earlier portion of the first sound, and, therefore, with the contraction of the right ventricle as well as the left.

3. The position of maximum intensity of the sound corresponds to the right ventricle. In thirty-four cases of mitral stenosis, which we have examined with special reference to this point, the average position of maximum intensity of the "snap" was about three-quarters of an inch to the right of the apex-beat. Also, unlike the systolic mitral bruit, the intensified first sound appears to be conducted slightly upward and to the right, rather than to the left of the apex beat.

4. There are other items of clinical evidence which go to bear out this view of the origin of the "snap" in the right ventricle. It not infrequently happens that, in a case where the first sound is at first a well-marked feature, the right ventricle gradually gives way and signs of back pressure in the veins ensue. In such cases the rumbling pre-systolic murmur usually becomes markedly diastolic in time, and loses its definite character; at the same time the increasing distention of the right ventricle mechanically separates its valvular cusps, preventing their due closure and giving rise to a tricuspid, systolic murmur. No doubt, however, a slight amount of tricuspid regurgitation is compatible with persistence of the "snap." In a case which we have recently had under observation, the snap-like sound vanished with the establishment of tricuspid insufficiency.

In 1889 the patient was admitted into the hospital with well-marked symptoms of mitral stenosis, the first sound being greatly intensified. At the end of 1890 she was readmitted with signs of failure of the right side of the heart; the "snap" was then found to be inaudible, and a systolic murmur was distinct over the tricuspid area. On post-mortem examination, button-hole stenosis of the mitral valve was found, with immense dilatation of the left auricle and right chambers of the heart; while the tricuspid orifice was dilated to the size of a five-shilling piece. The left ventricle was abnormally small.

We must, however, mention, with reference to this point, that an objection to it lies in the fact, that, along with the production of tricuspid incompetence, the pressure in the left ventricle also sinks, since the tension in the left side of the heart in mitral stenosis is, to some extent, dependent upon the right ventricle. This objection, however, appears to us to have but little weight when the rest of the evidence is borne in mind. We must add that, on mentioning our views to Dr. Sansom, he informed us that he had long-held a similar opinion as to the production of the sound in question, and has recently brought it prominently forward in his treatise upon the *Diagnosis of Cardiac Disease*.¹

EARACHE AND ACUTE MIDDLE-EAR INFLAMMATION.

BY B. ALEX. RANDALL, M.A., M.D.,

PROFESSOR OF OTOTOLOGY, PHILADELPHIA POLYCLINIC; CLINICAL PROFESSOR OF EAR DISEASE,
UNIVERSITY OF PENNSYLVANIA, ETC.

PAIN in or about the ear is a symptom of such frequent occurrence in general practice, particularly among children, that its comprehension and mastery ought to be a matter of course to every physician; and

¹ Griffin & Co., 1892.

the blunders which come to the notice of the specialist should be less numerous and striking. Yet the fact remains that nearly every practitioner has a different remedy—generally “ear-drops;” and time is nearly the only agent common to all. The urgency of the suffering seems to stamp the matter with a strong suggestion of entity, and all thought that various conditions may underlie it, and that the pain is best relieved by combating the cause, seems to be left for tardy recognition at best. Time will almost always bring remission, while hands, if not heads, are kept active in the efforts at relief; and when the patient gains a respite, the last measure tried is naturally credited with a victory which is all too tardy and must always be followed up to be secured. Cases are numerous in children, and occur in adults, where the localization is not evident, and pain and serious symptoms may long persist before the aural cause is suspected.

It seems, therefore, worth while to reiterate some rather elementary facts and simple suggestions, in the hope that prompt and surer aid may result to some of the numerous sufferers.

It is almost axiomatic in this connection that the pain is but one symptom of an inflammatory condition, and that the vague cloak of “neuralgia” ought to cover few cases, and only after thorough and repeated investigation. Yet it must be borne in mind that this inflammatory condition may be in the external as well as the middle ear; also that it may be merely referred to the ear from its real seat in tonsil, tooth, or other adjacent part. Many cases may demand careful search to reveal the truth, yet the majority may be readily traced to the ear and diagnosticated as to the exact condition. A touch on the tragus may at once indicate the tenderness present within the ear, and inspection, with any adequate light, may promptly show evidence of the inflammation; but the latter has its difficulties in young children, and concave reflector and speculum, carefully used, are often needed to give any idea of the exact condition. While the usual direction of the auditory canal in the adult is a little upward and forward as it passes inward, the child’s canal has little bony portion to give it this direction, and the flaccid cartilaginous tube is generally pressed against the upward curving surface of the squama, and, even when drawn downward, gives less of a point-blank view of the membrana tympani than in the adult. In the later stages of a tympanic suppuration the child’s canal is almost sure to be swollen from the irritation of the excoriating discharge; and even in the earlier stages such diffused congestive swelling is not uncommon in adult or child. This can easily be taken as the prime condition, rather than its consequence; and the deeper condition, which is difficult of demonstration, may be even unsuspected. Thoroughness in the investigation may seem a needless cruelty when a condition apparently adequate to explain the suffering lies patent to view, and, in some

cases, even the fullest study may fail to prove the involvement of the tympanum. Here, however, the rule of law should be reversed, and "not proven" *sound* should leave the doubt against the middle ear and call for treatment—that may be useless, but can hardly be of any disadvantage. In any case, then, of earache, the entire auditory tract should be investigated with all possible stringency and the exact seat and meaning of the pain learned, as the preliminary to treatment.

Often the physician is summoned to the patient at night, after the suffering has already greatly sapped the endurance and domestic medication has exhausted most of the patience. Speedy relief, with the minimum of investigation, is demanded, and any thought of cause and rational treatment is deprecated, because so much has already been suffered. The unreasonable part of this will be overridden, of course; but limitation of the study will at times seem necessary, and important or essential points may be all too easily overlooked unless some routine of examination be employed. It is essential to remember, therefore, that tympanic inflammation is present in the great majority of these cases, and its origin is almost certainly in the nose. A coryza, past or present, is always to be suspected, investigated, and treated, if we wish to combat the affection rationally; the other ear is to be examined, as all too probably implicated in less degree, or, if healthy, as furnishing at least some index in configuration and antecedent condition to what we should find on the painful side. Retraction, injection, scarring, or chalk deposits may throw light upon the present condition of the other ear and furnish records contradictory to a misleading negative history. Mere thoughtful inspection will often give valuable facts, such as redness or œdema about the ear, or the unsymmetrical prominence of one ear, suggestive of mastoid swelling; and palpation may reveal local heat, tenderness, or fluctuation, without being really noticed by the patient. The body temperature should not be overlooked, since a notable rise in it may be expected in the adult, as, of course, in the child, if the affection be important. In the stricter inspection the brow-mirror and good illumination are very desirable as rendering diagnosis surer, quicker, and gentler. The ear speculum, which too many regard as essential to the study, may often be dispensed with, and a sufficient study made without it; and it should be employed only when the attempt to avoid its use has failed. Warming it, if of metal, by friction or the flame, may mitigate the discomfort of its touch. It should be introduced with the canal straightened and opened by traction and the minimum of pressure used to place and retain it in position, although as an exception it may be used as a dilator. The condition of the meatus walls should, of course, be observed before its introduction, that swollen, tender points may be avoided, flakes or wax masses not displaced into obstructing positions, and the speculum correctly directed

at the first. The light spot upon the drum-head should be the first landmark sought, since its presence and normal triangular form would assure us at once of the position and natural position of that part at least; then the short process and handle of the malleus should be studied, as telling of any congestion or of any bulging to conceal them. So, too, in the nose, posterior rhinoscopy may be impracticable, even for an expert, yet the condition be easily deduced from the appearance of the pharynx; and the anterior rhinoscopy, with an aural speculum or none at all, may give satisfactory data. Spraying of the nares with a mild cleansing agent, like Dobell's solution, should be expected when the practitioner is called to the case, and the atomizer taken, together with the Politzer bag, syringe, and forehead-mirror. Only after some such cleansing, which a mopping of the pharynx vault and tube-mouths with the curved cotton-carrier passed above the uvula will complete, is it wise to use the tympanic inflation, either for its diagnostic or its therapeutic effect. As to this measure, denounced as improper by some authorities, I can hardly be too emphatic in commending its careful employment. Thus only can we establish a diagnosis in some cases, while in so doing we may obtain great and real relief for the sufferer. Violent distention of an inflamed drum-head would, of course, be painful, and perhaps harmful; a thinned, distended membrane might be ruptured needlessly, and, if the naso-pharynx be unrelieved of a septic condition, deleterious matter might be forced up into the tympanum of either side. Yet fair cleansing before it, and gentle care in its use, exclude these risks; while it will often establish drainage by the natural Eustachian channel, rupture in the safest way a drum-head that needed opening, or evacuate through a small perforation a tympanum which could not otherwise be emptied. Even its careful use may give great temporary pain; but this may be more than compensated by the later relief, and our other methods of treatment can generally promptly end this suffering.

The best single measure at our command in treating the aural condition is usually hot syringing; for, while capable unaided of doing much to relieve at once the pain and its inflammatory cause, it fittingly combines, with the other measures, to meet all the needs of the case. As a means of cleansing the canal of epidermal exfoliations or anything else that obstructs our inspection of the walls or drum-head, it is probably, in all hands, the gentlest and best. To combat the vascular engorgement and stasis, whether of canal or tympanum, its stimulating and constricting effect can hardly be surpassed; and as a means of allaying the pain, that may be the most prominent and urgent symptom, it is surer and quicker than almost all others. Many medicinal drops are in vogue, but unless *warmed*, they generally fail in their purpose; heat may be well applied also by dry means, like the hot-water bottle or the salt-bag;

cotton upon the probe may serve excellently to clean out the auditory meatus: yet in all lines the one measure of hot syringing can rival, if not surpass, the combined value of the other three. Its temperature must be carefully adjusted to the purpose and the tolerance; "as hot as can be borne" is a good rule, flexible rather than vague, and adaptable to various cases. Gentleness in its employment is always called for, especially if used to allay pain, and the slowness of the flow greatly influences the tolerance which may be obtained for very hot water. The little bulb with a soft-rubber tip, generally obtainable, which can be safely passed a short distance into the meatus, is very useful for this hot douche; but any syringe can serve, and at need the bulb of the atomizer can be used for this douching, as well as in place of the Politzer bag. A pint or more of water can be used with advantage, and then the ear drained and lightly mopped dry; then a flake of cotton in the canal or a warm, dry compress over the entire ear region will protect against chilling. A child will usually be found in bed; an adult had better be put there; for needless as such precaution may seem to a busy man, it may make all the difference as to his escaping an imminent suppuration of the tympanum and mastoid. Aconite or similar general measures may be called for, a laxative or even a purge may be needed, and the control of pain may be aided by leeching or instillation of morphine and atropine. Cocaine is usually inferior in value, though it ought to deplete and anæsthetize the tissues, and either of the other drugs has more lasting effect; but combinations are perhaps better than the single medicament, of which water is the best vehicle. Oils, glycerin, or tinctures have much more disadvantage than value, common as is their employment. Blood-letting in the incipency or very acme of the congestion is of the greatest value to relieve pain and avert serious results; but coming a little later, it rather favors vascular relaxation and retards resolution. Poultices are dirty and incomplete means of applying heat; need frequent changes, if they are not to favor suppuration, and will often macerate the external parts, with small gain to the deeper seat of trouble. Counter-irritation has similar drawbacks, unless it be a mere placebo of iodine stain; and a host of other popular means, while rarely devoid of value, are certainly of limited usefulness and considerable harmful potency.

In conclusion, then, it may be repeated that earache is most often due to acute tympanic inflammation arising from a naso-pharyngeal condition which demands treatment. Cleansing and detergent sprays and post-pharyngeal painting with astringents can control this and relieve any referred pain from this location. The hot syringing of the ear will give any needed cleansing, allay the local pain, and, by reducing the inflammatory congestion, help on the resolution. Protection, local and general, with medicinal treatment of general symptoms, will generally

give such prompt and real relief that the host of other remedies may remain as an unemployed reserve. The physician summoned to a case of earache can generally leave his morphine and cocaine at home, if he will take his brow-mirror, a syringe, and an atomizer.

HYDROTHERAPY IN THE TREATMENT OF NERVOUS AND MENTAL DISEASES.

BY FREDERICK PETERSON, M.D.,

CHIEF OF CLINIC, NERVOUS DEPARTMENT, VANDERBILT CLINIC, COLLEGE OF PHYSICIANS AND SURGEONS; ATTENDING PHYSICIAN NEW YORK HOSPITAL FOR NERVOUS AND EPILEPTIC; FORMERLY FIRST ASSISTANT PHYSICIAN AT THE HUDSON RIVER STATE HOSPITAL FOR THE INSANE.

IN advocating a more general use of hydrotherapy in diseases of the nervous system and in insanity, I wish to forestall criticism by saying that I do not do so to the exclusion of other means of treatment, for we possess adjuncts of great importance in massage, Swedish gymnastics, passive and active machine movements, and dietetics, all of which are also deserving of much wider attention than is usually given to them. It is too well known that the mere administration of drugs, very valuable as many of them may be, and the employment of electricity, even if done scientifically, as is seldom the case, are rarely sufficient in themselves, especially in nervous diseases, to effect a cure.

Many of the scientific principles of hydrotherapy have already been established, but it would be well worth while to carry out at a few of our clinics and in the physiological laboratories some of those elaborate experiments with water which are frequently resorted to for the purpose of demonstrating the uses of new drugs. The "water treatment" certainly has many features which appeal strongly to our sense of rational treatment, for are we not able thereby to affect very markedly the local innervation, to dilate and contract vessels, alter the circulation in a part, change the distribution of the blood of the whole body, retard or accelerate the blood-current, weaken or strengthen the cardiac contractions, vary the amounts of secretion and excretion, increase heat radiation? And who can calculate to what degree we may thus influence the biochemical processes of the body, the metabolism of tissues, the carrying off of degenerated and toxic substances? or determine how much we may affect the vascular neuroses, the local anæmias and hyperæmias of the brain and spinal cord? We do wrong, therefore, not to properly investigate this agent, but to relegate hydrotherapy, as is so often the case in this country, to quacks who in some States are even without a medical degree, yet who still are known to cure many cases that find their way into their hands.

It would be well if some of our large schools would initiate a course of lectures on the subject.

In continental Europe the "water cure" has become of late a scientific remedy, one recognized as of great value, and everywhere—in asylums and hospitals, at health resorts, and in the cities—at the command of all physicians in private practice, are excellent means of making use of hydrotherapy where it is indicated.

I will here enter into details as to hydrotherapeutic measures only in so far as mental and nervous diseases are concerned; their manifold application in a great variety of general diseases, such as fevers, disorders of the stomach and intestinal tract, affections of the respiratory and circulatory organs, and the like, has become fairly well known in America, particularly through the earnest propaganda of Dr. Simon Baruch,¹ of New York.

In my tour of inspection of asylums for the insane in Germany, Holland, France, Belgium, Italy, and Austria, in the winter of 1886–1887,² I was surprised to find how universally hydrotherapy was employed in the treatment of certain conditions in insanity, and with what excellent results; and in a visit to the new insane asylum at Athens, Greece, in 1892, I was astonished to note how well equipped a hydrotherapeutic establishment it possessed, although situated in a country we are disposed to consider somewhat out of the track of modern progress.

On my return to America, in 1887, I put into practice, as well as means would permit, at the Hudson River State Hospital for the Insane, some of the principles of hydrotherapy that I had acquired abroad, but, as the facilities were quite inadequate, my hydrotherapeutic measures were limited to applications of warm and cold baths, brief or prolonged, the wet pack, wet compresses, and ice-bags. Nevertheless, I learned from observation and experiment how much could be accomplished in the treatment of insomnia, congestive conditions, states of mental excitement, restlessness, and the like, by even such simple measures, and understood how much more might be done were each asylum provided with means for the methodical, systematic, and scientific employment of the water treatment. As it is, I do not know of any asylum in America that is supplied with anything beyond the ordinary baths for purposes of cleanliness, and one of the objects of this article is to stimulate a more general consideration of the value of hydrotherapy by asylum authorities, with the hope that it may lead to installations of the necessary apparatus in most of these institutions in our land.

With reference to general nervous diseases, I am sure there is a tendency everywhere among neurologists to look with more and more

¹ *Uses of Water in Modern Medicine.* Detroit: Geo. S. Davis.

² "Some European Asylums," *Am. Journ. of Insanity*, April, 1887.

complacency upon this means of treatment as one of great value. I know that this is true in all parts of Germany, Austria, and France. In some conversations with Professor Winternitz, who, as is well known, occupies a special chair of hydrotherapy in the University of Vienna, I learned that in his practice of over thirty years' duration, fully three-fourths of his patients were sufferers from nervous disorders, and his remarkable success in relieving and curing bad cases is everywhere attested. I had the pleasure of visiting his large establishment for hydrotherapy, at Kaltenleutgeben, near Vienna, and of examining his methods and the apparatus he employs there.

I am aware that among my neurological colleagues in New York, also, there is a growing disposition to make greater use of hydrotherapeutic and mechanical treatment in nervous diseases, though the facilities for properly carrying out some of the procedures are still to some extent wanting.¹

GENERAL LAWS.

The following are the ordinary effects to be borne in mind in the application of hydrotherapy to disorders of the mind and nervous system:

1. Cold and warm baths affect the central nervous system in a reflex manner by stimulating the sensory nerves of the skin and the vasomotor nerves, and thus influencing the cerebral circulation. Cold excites and warmth diminishes irritability when thus applied.

2. Short cold baths, especially when combined with sprinkling, showering, or rubbing, are powerfully stimulating, exhilarating, and tonic.

3. Prolonged warm baths, steam and hot-air baths, and the hot pack, are relaxing, fatiguing, and soporific.

4. A cold bath stimulates various reflexes in the body, such as peristalsis and the visceral reflexes in the sacral portion of the spinal cord.

5. Warm baths, by soothing peripheral nerve irritability, exert a calmative influence over the central nervous system. They mitigate reflex spasm and contractions in voluntary or involuntary muscle.

6. Cold applications to the skin stimulate vaso-dilator nerves, dilate the peripheral vessels, and increase blood-pressure. Warm applications also dilate superficial capillaries, but by diminishing the tone of the vessel walls they also reduce arterial tension.

7. To lower the irritability of individual nerves or of the entire nervous system, prolonged warm baths or the hot pack are indicated.

8. As many hydrotherapeutic measures tend to reduce temperature, it is important to remember that in non-febrile cases, in anæmic conditions, and in debilitated states, the temperature must be raised artifi-

¹ Since writing the above there has been established a Hydriatric Institute at 635 Park Avenue, with unusual facilities.

cially before subjecting patients to hydriatric treatment. In some cases the temperature of the body on rising from bed in the morning is sufficient; in others a short stay in the hot-box may be needed.

APPLICATIONS IN CONDITIONS AMONG THE INSANE.

Before entering specifically into this subject, I wish to call the attention of asylum physicians to the adaptability of the rain-bath for the general purposes of cleanliness among patients in their institutions.

The rain-bath was instituted in Vienna (although the originator was a Berlin physician) in public bathing-houses for the purpose of increasing bathing facilities, *i. e.*, by its use space could be economized, a greater number of people could be cleansed in a given time than by ordinary methods, fewer servants were necessary, greater cleanliness was attainable, and the dangers of contagion were minimized. This bath consists of a dressing-room for each person, a small room adjacent, where the bather can stand, and a gentle shower at low pressure, like rain, which descends upon him, washing him thoroughly from head to foot and flowing away at once upon impenetrable floors into the sewers.

In our large asylums, as is well known, one or at most two stationary bath-tubs are supplied for each ward containing thirty to forty patients. There is a regular bathing-day each week, and upon that day most of the patients take baths in a way which is not always beyond criticism. They are hurried and imperfect baths, and frequently, if not carefully watched, the attendants make several patients bathe in the same water before cleansing the tub. The cleansing is not often as thorough as it should be. Besides the baths given to all on regular bathing-days, the filthy patients, that is, those who soil themselves in bed or who smear themselves with filth, are bathed frequently every day. While every precaution is taken as regards cleanliness that can be taken by the asylum authorities, still one is inclined to doubt the perfection of such bathing arrangements, and it seems to me that the rain-bath system could be employed with even more advantage in these institutions than in the public baths of cities. I hope some of our progressive superintendents will initiate this change. They will find in New York examples of the rain-bath system, recently introduced through the able advocacy of Dr. Baruch, at the public bath-houses at No. 7 Central Market Place, at the Demilt Dispensary (corner of Twenty-third Street and Second Avenue), the Baron De Hirsch Baths, at Essex and Market Streets; and at the Juvenile Asylum. Another advantage of the rain-bath in asylums would be the prevention of injuries such as occur occasionally on putting excitable patients into the tubs, and the impossibility of scalding or suicide. Rare as these accidents may be, they have to be carefully guarded against under present arrangements.

A simple hydriatric chamber. This might easily be provided in each ward—or, at least, in one out of five wards—by slight alteration of the present bath-rooms. The walls would require protection by means of a rubber lining, or, better, tiles or marble, and the floor should be zinc-lined, tiled, cemented, or made of asphalt. Several rain-baths should be installed. There should be one stationary bath-tub. There should be several kinds of douches, connected with the hot and cold water pipes, and to this douche-apparatus should be attached a gauge for measuring the pressure. In summer the hydrant water is never cool enough for some purposes, and a small reservoir should be arranged (coils packed in ice) for obtaining cold water when required. A hot-air box is very useful. The equipment is complete when to these are added one or two foot-baths, a sitz-bath, several cooling-caps or ice-caps, Chapman's ice-bags, and a liberal supply of linen for wet-packing, dry-packing, wet compresses, and bandages.

It is very essential that such an establishment be put in charge of an intelligent nurse who would learn under the direct instruction of the physician in charge how to carry out properly every procedure.

The room should be capable of being heated when in use to a temperature that will feel agreeable to the bather when undressed. It is needless to say that patients should not be treated in a cold bath-room.

INDICATIONS AND METHODS.

For tonic and refreshing effects. A cold rain-bath (50° to 70°), the patient rubbing himself while in the bath. Duration five to ten seconds; or the half-bath in a tub at 65° to 75° Fahr., ten to thirty minutes. By "half-bath" is meant only six to eight inches of water in the tub, in which the patient lies and splashes about and is rubbed by an attendant. The object in both is to get the exhilarating and stimulating effects of the cold, and also the mechanical effect of the water impinging upon the skin. Such a bath should be taken every morning.

For powerful tonic, revulsive, and derivative effects. The cold douche increases reflex excitability, and causes hyperæsthesia of the skin. It is a powerful stimulus, mental and physical. By means of various nozzles it may be ejected in the form of a jet, a spray, a shower, a fan, and by alternating with hot and cold water we have what is known as the Scotch douche. Such procedures are indicated in lethargic and hysterical forms of insanity, where there is sluggishness of the intellect, apathy, stupor, catalepsy, etc., and in melancholic cases, and in all cases where there is anæmia, chlorosis, or gastric disorders.

To produce sleep. The prolonged warm whole bath is indicated. Temperature 70° – 90° . Duration, one-half to two hours. When of long duration the patient may be suspended in a hammock made of a sheet. Indicated in cases of melancholia with excitement and in some maniacal

conditions. As a general hypnotic agent, however, applicable to all forms of insomnia among the insane, the hot wet pack stands foremost. It is applied in this way: A blanket 9 by 9 feet is spread upon the patient's bed, and upon this a sheet wrung out dry after dipping in hot water is laid. The patient lies down upon this, and the sheet is at once evenly arranged about and pressed around the whole body with the exception of the head, after which the blanket is also immediately likewise closely adjusted to every part of the patient's body. Other dry blankets may now be added as seems necessary. The patient remains in this an hour or longer; all night if asleep.

Maniacal excitement. In this condition we all know how important it is to control motor excitement as much as possible in order to prevent the metabolic waste that progresses only too rapidly in many cases, often leading to death from exhaustion in a few days. Formerly we were accustomed to fasten the patient in bed with a strait-jacket, and dose with hyoscyamine liberally, and this treatment undoubtedly saved many lives, but the fastening in bed has been to a great extent tabooed of late years. It is astonishing to note the good effects of hydrotherapy in many cases of this kind. The measures to be carried out are those indicated for insomnia. It is not often that patients laboring under great excitement can be placed in the warm bath, but the wet pack is applicable in nearly every case. It not only diminishes the erethism, but often brings about refreshing sleep, and always when kept applied prevents metabolic waste by motor excitement. I know of nothing that gives one better results in such cases than the wet pack in conjunction with overfeeding and occasional doses of hyoscyamine or duboisine if needed.

Congestive headaches. These headaches are quite common among the insane, and one of the best hydriatric procedures for their relief is a running water cold foot bath every evening. The object is to dilate the vessels in the feet, to derive the blood from superior parts. One must, therefore, prescribe a prolonged foot-bath, accompanied by rubbing and chafing of the feet for the mechanical effects of the water; or a strong fan douche of cold water applied to the feet very soon dilates the vessels and warms and reddens the feet. Actual experiment has shown that the temperature in the auditory meatus is lowered as much as one degree by a cold foot-bath, and conjunctival vessels have been observed to contract.

Constipation. In the atonic condition of the intestines in most cases of melancholia and in some other forms of insanity, a powerful stimulus to peristalsis will be found in pouring water over the abdomen when the patient is in a tonic half-bath of low temperature.

APPLICATION OF HYDROTHERAPY IN NERVOUS DISEASES.

The methods of using hydriatric measures for the purpose of a powerful nervine tonic and derivative, and to produce sleep and soothe nervous

excitement and irritability, have been described above. I will add here some of the special indications in various nervous disorders in a brief and practical summary, alphabetically arranged.

Anæsthesia (cutaneous). Short cold jet and fan douches of strong pressure to the anæsthetic areas. Temperature, 50° to 70°. Duration one minute. Daily.

Angio-paralytic hyperidrosis of the feet. Prolonged cold foot-bath with chafing, or fan douche of cold water to the feet. Temperature, 60°. Duration twenty minutes for bath, five minutes for douche.

Chorea. Cold plunge beginning at 90°, daily reducing until 70° is reached.

If anæmic, spinal spray, jet or fan douches, at first warm until patient becomes accustomed to them, then gradually reduced to 60° or 50° (Duval).

Epilepsy. Cold shower baths and cold sponge baths daily are beneficial. The shower baths should be rain-like in character—that is, not too forcible.

In many cases a morning and evening bath (the “half-bath”) proves very serviceable. The “half-bath” is taken in a bath-tub only half filled with water, and when taken should be accompanied by energetic rubbing of the patient by an attendant. This bath lasts five minutes, and the temperature should not be under 50° and not over 70° F.

Where there is evidence of hyperæmia and increased blood-pressure in the head, the cold cap is useful.

While these are the general indications for hydrotherapy, certain measures are often of use at the time of seizures. During a fit or during a *status epilepticus* it will be observed that there is one of two vascular conditions present: either the face is pale and there are signs of brain anæmia, and in this case warm wet compresses should be applied to the head and genitals, accompanied by friction of the trunk upward, the body being placed with head low and arms uplifted; or there is turgescence of vessels in the head, the face is red, the carotids beat strongly, and under such conditions a contrary procedure is indicated—cold compresses to the head, neck, and genitals, strong wet beating of the feet, with a high position of the head. Daily applications for thirty seconds.

Headaches, neuralgias, and migraines. If anæmic, heating cephalic compresses (wring out thin linen bandages in very cold water; wrap head in capeline manner, and cover with one or two layers of dry linen or flannel). Apply at bedtime. Upon removal, envelop head in dry cloth and rub it dry.

If *hyperæmic*, leg bandages (a piece of towelling a yard long is dipped in cold water at one end—one-third—thoroughly wrung out and wrapped closely about each leg, so that the wet surface is next the skin

and the dry portion envelops the wet two or three times. Or, wet stockings may be put on and covered with dry towels). These are applied at bedtime and retained through the night.

In many headaches, especially of a congestive character, a prolonged cold foot-bath (twenty minutes, 60°) or the fan douche to the feet (five minutes, 60°) is very palliative.

Hysteria. For *erethetic type*: Wet pack, 60° to 70° for one hour or more, followed by massage (Putnam Jacobi); or the rain-bath at 75° to 65° for thirty-five seconds daily at twenty pounds pressure (Baruch).

For *depressed type*: Cold affusions while standing in warm water, or hot-air bath, followed by rain-bath for thirty seconds at 85°, daily reducing until 60° is reached, this to be followed by spray douche for five seconds at 65°, or jet douche for three seconds at 65° to 55°. Reduce douche gradually to 50° or less, increasing pressure from two pounds to thirty (Baruch).

Hyperæsthesia (cutaneous). Long-continued cold douches to affected area. Daily twenty minutes at 70° to 80°.

Insomnia. Wet pack; see above.

Impotence. Brief cold sitz-baths. Daily, 56° to 64°, one to five minutes. The psychrophore, *i. e.*, application to prostate of cold by a rubber condom or bladder secured over a rectal irrigator *au double courant*.

Incontinence of urine. In paresis of sphincter or detrusor brief cold sitz-baths, daily, 56° to 64°, one to five minutes. Cold rain-baths (50° to 60°) and douches as general tonics.

In spasmus detrusor vesicæ, on the contrary, prolonged lukewarm sitz-baths, daily, thirty to sixty minutes, 70° to 90°.

Locomotor ataxia. Prolonged warm baths, five to twenty minutes, 86° to 95° (Leyden). Hot-air baths to lower extremities followed by affusions or douches, 60° to 70° (Hoepflein).

Neuralgia of all types, especially tic. Hot-air bath, to perspiration, every other day, followed by gradually lowered douches (Baruch, Duval).

Sciatica. Hot-air bath till patient perspires, followed by cold plunge, or douche gradually lowered to 65°.

Spinal-cord affections. In various chronic diseases of the spinal cord the daily half-bath, 65° to 82°, six to ten minutes' duration, with affusion and chafing, will be found useful. In some cases of compression and injury to the cord, in myelitis, and the like, where there is paralysis of the rectum and bladder and formation of bedsores or trophic lesions, resort may be had with advantage to the permanent bath (Riess). A sheet fastened in a bath-tub makes a hammock in which the patient lies at first for an hour or so daily, later all the time, except at night, when

he is put to bed. The water is kept at a temperature agreeable to the patient (88°).

Spinal irritation. "Douche filiforme" as a rubefacient and epispastic along the spinal column; or rain-baths, 65° to 85°, and douches.

Spermatorrhœa. Cold sitz-baths, five to twenty minutes, 50° to 70°, daily at bedtime; contra-indicated in sexual irritability and active pollutions, where prolonged warm or hot sitz-baths at 90° to 98° should be used.

Finally, I need scarcely say that if the alienist and neurologist are to make use of hydrotherapy at all, it must be borne in mind that precision of method is absolutely essential. As much care is necessary as in the prescription of drugs; for any violation of the principles or neglect of the modes determined by long experiment and experience is certain to be followed by unfortunate results.

201 WEST FIFTY-FOURTH STREET.

METHODS AND RESULTS IN CASES OF NEOPLASMS, VESICAL CALCULI, AND DISEASES OF THE BONES AND JOINTS.

BY J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY, UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE
UNIVERSITY AND GERMAN HOSPITALS, ETC.;

AND

ALFRED C. WOOD, M.D.,

ASSISTANT SURGEON, UNIVERSITY HOSPITAL; INSTRUCTOR IN CLINICAL SURGERY,
UNIVERSITY OF PENNSYLVANIA.

(Continued from page 58.)

MALIGNANT TUMORS OF THE BREAST.

Excision of the breast for carcinoma has been performed thirty-five times during the period embraced in this report.¹ All of the cases recovered. Some of the patients were operated on while the cancers were still small; in most, the disease was well advanced. In performing the operation the usual elliptical incision was made, one extremity terminating in the axilla, and thus permitting of free access to this region. The breast was invariably entirely removed, and all affected skin sacrificed. The axillary glands were removed in every case, whether involved or not, principally by the use of the finger. The wounds were usually drained for twenty-four hours, and with few exceptions they healed by

¹ Sixteen cases have been operated upon by Dr. White at this writing (November 19th) since October 1, 1892, but are too recent to include in this series. It may be stated, however, that in all there was union by first intention.

primary intention; the average time required for healing was about ten days. Many cases were completely healed in six days.

The observation that in a few cases operated on several years ago and in which suppuration occurred, the proportion of permanent cures is unusually great, has led Dr. White to suggest that possibly free supuration may at times give an added security against recurrence, acting very much as would a strong irritant applied to the wound surface, *i. e.*, exciting an inflammatory reaction which may destroy the comparatively vulnerable cancer cells beyond the areas reached by the knife.

In clearing out the axilla the glands were removed from beneath the pectoralis minor up to the clavicle. The axillary vein is the only vessel which is liable to injury. When possible, this vessel was exposed at once. Its exact position being known, the danger of wounding it is much lessened. In one case (not included in this series) its walls were infiltrated with cancerous growth. The diseased portion of the vein was resected, ligature being applied above and below. The patient made an uninterrupted recovery. The danger of opening the axilla has been magnified by some writers. In Dr. White's experience, which includes a large part of that of the late Dr. D. Hayes Agnew, an accident from this procedure has not been met with.

The only points in dispute at the present day in relation to the surgical treatment of breast cancer have regard to the extent of the operation. Butlin (*Operative Surgery of Malignant Diseases*) has advanced what seem to him good reasons for believing the removal of the entire breast to be unnecessary. Gross, on the contrary, recommended not only the removal of the whole breast and the cleaning out of the axilla, but also the sacrifice of all the skin covering the affected glands, leaving a large surface to heal by granulation.

As to the latter method, Dr. White believes that the "dinner-plate" incision involves an unnecessary sacrifice of skin, which subjects the patient to the prolonged and tedious convalescence attending a large granulating wound, and that it does not add anything to the security of the patient against recurrence. An elliptical incision which includes all affected skin best fulfils the requirements.

Although Mr. Butlin has probably made his position as strong as it is possible to do in objecting to the removal of the entire breast as a routine practice, still his arguments are not convincing. The tendency of malignant growths to extend beyond the possibility of recognition by the eye or the touch, and even by the microscope, is so well known that it seems the obvious duty of the surgeon to remove every particle of such tissue in the immediate vicinity of the growth that can be taken away without undue mutilation or deformity, and with a reasonable degree of safety to the patient. For these reasons, in this service the entire breast has been removed in every case of malignant disease.

The same argument holds good with regard to the necessity for cleaning out the axilla. It is impossible by the touch to detect slight glandular enlargements in the mass of axillary fat, before removal, that are very apparent to the eye and may be distinctly felt after being removed. When the glands have become so enlarged as to be readily felt through the skin, the disease has probably passed beyond the lymphatics and a permanent cure can scarcely be hoped for, although operation is still indicated. It must not be supposed, however, that even this detail of operative procedure is universally accepted; one of the most competent and skilful of modern surgeons, Mr. Frederick Treves (*Manual of Operative Surgery*), advises against removal of the axillary lymphatics if the finger passed into the axilla through the upper end of the incision fails to detect enlarged glands, provided that the tissues right up to the fatty base of the axilla have been very liberally removed. The reasons for dissenting from this opinion have been given.

NEOPLASMS OF THE TONGUE.

Portions of the tongue have been removed in six cases. Of these operations, four were for carcinoma, one for a cyst, and the fifth for sarcoma. To give free access to the field of operation the cheek has been divided from the angle of the mouth backward to the masseter muscle on the side corresponding to the lesion on the tongue. Preliminary ligation of the linguals has not been found necessary. In two cases, however, a preliminary tracheotomy was done. The vessels were caught as the tongue was divided, after the manner of Whitehead. In no case was any difficulty experienced in tying the lingual arteries. Oozing from smaller vessels sometimes proved difficult to stop. The growth was removed together with a wide margin of healthy tissue, and when this was practicable the wound in the tongue was united with silk sutures. Where there was any doubt about the absolute extirpation of all diseased tissue, and in those cases in which it was not possible to sew the wound, chloride of zinc solution, thirty grains to the fluidounce, was brushed over the exposed surface. The zinc chloride is a powerful antiseptic, and in addition produces a slight superficial eschar, which, besides destroying any diseased tissue that may have been left, tends to prevent absorption of microbes or ptomaines during the first twenty-four or forty-eight hours preceding the development of granulation tissue.

The incision of the cheek was approximated by hare-lip pins. Special care was taken in the after-treatment of these cases, and the use of sprays and antiseptic mouth-washes every half-hour or hour was especially insisted upon. Sprays of peroxide of hydrogen followed by washing with phenol sodique in water 1:6, gave the best results.

In the case of sarcoma the same precautions were taken as in those of carcinoma. The wound healed promptly. It has been necessary at

three different times subsequently to remove recurrent sarcomatous growths from the neck.

In the case of the cyst it was possible to enucleate the sac so that very little healthy tissue was disturbed. Healing was rapid in all of the cases. In three of the carcinomatous cases there has been no recurrence up to this time, fifteen months after operation; in the fourth there was apparent freedom for a few months, and then a rapid and extensive return, which fortunately soon resulted fatally.

TUMORS OF THE JAW.

Three cases of osteo-sarcoma of the inferior maxilla, two of the superior maxilla, an osteoma involving both superior maxillæ (Fig. 14), and a fibro-myxoma involving the lower jaw, were treated by excision. All of these patients recovered promptly and without complications. In

FIG. 14.



Osteoma of both superior maxillæ.

the case of bilateral osteoma, both upper maxillæ were removed at the same time, the patient was not severely shocked, and recovered as rapidly as the cases of single excision, though the ultimate cosmetic result was not satisfactory. The operation, however, was undertaken for the relief of agonizing pressure-pain, and from this standpoint was entirely successful.

After excision of the superior maxilla the cavity was packed with iodoform gauze for twenty-four hours, and thereafter was sprayed with peroxide of hydrogen, and then washed with phenol sodique in water 1:6, hourly during the day, and kept packed with iodoform gauze during the night. In excision of the lower jaw, the mouth cavity was shut off by suture of the mucous membrane. As an added precaution, antiseptic mouth-washes were regularly employed at short intervals.

Myxoma of the inferior maxilla; excision.—H. A., aged seventeen years, was sent to the hospital by Dr. Dechert, on account of a tumor of four years' standing, involving the lower jaw. The only antecedent history that seemed to have any bearing upon the trouble was the fact that the temporary teeth

were lost early, and the permanent teeth were late in appearing, although this may have been a mere coincidence. Examination showed that the left inferior maxilla was more than three times its normal size. The overlying soft parts were healthy. A free incision was made on the under surface of the tumor, parallel with the jaw, dividing all the structures down to the bone. The periosteum was elevated. The bone was disarticulated on the left side, and sawn through at the position of the canine tooth on the right side. The wound was drained and dressed antiseptically, antiseptic mouth-washes being employed at frequent intervals. The patient made a rapid recovery, with very slight loss of motion or of facial expression. His health is good at this writing, now a year after the operation. There has been no appearance of subsequent involvement of the remaining portion of the bone. Microscopic examination of the tumor showed the growth to be a fibro-myxoma. The bone had become a mere shell, covering this mucoid substance.

EMPHYEMA OF THE ANTRUM.

Two cases of empyema of the antrum were opened and drained. One presented typical symptoms, *i. e.*, œdema of the overlying soft parts, and a purulent discharge from the nose when the patient lay down and turned on the sound side. The other case gave no history of discharge, there was no œdema, and the symptoms simulated almost exactly those of a solid growth. Indeed, such a diagnosis had been made by surgeons, and the operation of excision had been advised. In one of these cases, the canine tooth being sound, the cheek was turned up and the antrum was entered through the canine fossa; in the other, the canine tooth was pulled, and a small gouge was pushed up through the alveolus. Both recovered completely, though in the latter instance there was extensive necrosis, a large portion of the superior maxilla being removed through the mouth, and without opening the cheek.

SARCOMA OF PAROTID REGION.

E. J., male, aged forty-nine years; two years ago first noticed a small excrescence below the right ear; this was removed by a silk ligature. Two months later a swelling began in the region of the parotid gland, which grew slowly at first and then more rapidly, and became painful. On incision, it was found that the parotid gland was filled with altered blood-clot, and that there was a hemorrhagic infiltration of the surrounding tissues. The disease seemed to have begun in the glandular or other structures superficial to the parotid, which though disorganized by ulceration of its capsule and pressure of extravasated blood, did not appear to be infiltrated with the sarcomatous elements. A small portion of the posterior part of the gland was, therefore, allowed to remain, and ligation of the parotid and section of the facial nerves were thus avoided. Good union, no facial paralysis. The absence of return at this writing, one year after operation, would seem to justify this procedure.

CARCINOMA OF PAROTID.

Female, aged seventy-two years, came to the hospital on account of a tumor of stony hardness in the parotid region. The swelling seemed limited mostly to the gland, except at its upper portion where the skin was adherent and ulcerated. The entire parotid gland was extirpated, together with the affected skin, extending up as far as the temporal region. It was necessary

to tie the external carotid artery, and the facial nerve was also necessarily sacrificed. The upper part of the sterno-mastoid was infiltrated. This was removed by an incision through the healthy muscle. The patient made an uninterrupted convalescence, and has remained well for eight months.

LIPOMATA.

Eleven lipomata were excised. They were generally single, encapsulated, of moderate size, and presented the pathognomonic symptom, *i. e.*, dimpling on pinching up the overlying skin. In one case the growths were multiple; in one the tumor was not encapsulated; in one it exhibited a migratory tendency, travelling from the superior carotid triangle to the sternal notch. All these cases healed promptly, generally under one dressing.

In the following instance the diagnosis was exceedingly obscure, and was only made after incision :

Lipoma of leg.—E. M., male, aged sixty-two years, came for advice on account of a swelling involving the antero-external aspect of the right leg.

FIG. 15.



Fibro-lipoma of leg situated beneath the deep fascia.

He stated that in 1887 he had an acute painful swelling under the right patella. This disappeared under treatment. In 1880 the present growth

made its appearance as a uniform swelling over the antero-external border of the tibia. It was soft at first, but gradually became hard. The tumor extended downward until it reached the front of the ankle, and it took on a nodular character (Fig. 15). The patient did not complain of pain. The skin was not involved. The chief interest of this case is in regard to the diagnosis. The peculiar appearance of the tumor, considered in conjunction with the age of the patient and the seat and history of the growth, seemed to make impossible a positive diagnosis between malignant neoplasm, tenosynovitis of unusual proportions, and lipoma. The growth was found to be a fibro-lipoma lying beneath the deep fascia, sending prolongations along the inter-muscular spaces and adherent at points to the inter-osseous membrane. An extensive dissection was required for its removal. The patient made a perfect recovery. The tumor weighed over two pounds.

SARCOMA AT BASE OF NECK.

J. B., male, aged nineteen years, came to the hospital on account of a large tumor at the base of the neck on the left side. Over a year before presenting himself here he noticed a small lump in the supra-clavicular fossa,

FIG. 16.



Sarcoma of the base of the neck.

at that time movable. It did not seem to grow much for a time, but became irritated by the pressure of the baskets which the patient's occupation obliged him to carry on his shoulder. In two months' time the growth had increased from the size of a pigeon's egg to that of a goose-egg, and from this time growth was very rapid. The measurements of the tumor were as follows: The smallest circumference of its base, nineteen inches; greatest longitudinal measurements from base to base, fourteen inches; greatest diameter, six and one-half inches. There was marked discoloration of the skin, through which greatly distended veins were seen ramifying; the skin was ulcerated on account of the irritating applications made by a "cancer doctor," and there was marked local increase of temperature (Fig. 16). The tumor was excised, and, on microscopic examination, proved to be a spindle-celled sarcoma. It weighed more than four pounds. The patient made a rapid recovery.

SARCOMA OF THE FOOT.

A. S., male, aged forty-five years, first noticed a small, dense lump on the sole of the right foot, between the first and second metatarsal bones, five years ago. But little inconvenience was caused by the growth, which

FIG. 17.



Sarcoma of the foot.

FIG. 18.



Sarcoma of the foot laid open, showing the central original portion which remained encapsulated for years.

did not appreciably increase in size for about three years. At the end of this time a swelling was noticed on the top of the foot, corresponding with the seat of tumor on the plantar surface. From this time growth was rapid and continuous, reaching the size shown in the cut (see Fig. 17) in less than two years. There was no severe pain at any time—only a sense of discomfort from pressure. On presenting himself for examination, the skin covering the tumor was found not involved; there was no redness or other sign of inflammation; the superficial veins were unduly prominent. The growth was believed to be either a sarcoma or an enchondroma, with the probabilities in favor of the former. The patient was advised to submit to exploration of the tumor, and if it was found malignant to have the foot amputated. This was accepted, and, after anæsthesia, a free incision through the enlargement revealed an unmistakable sarcoma, which it was impossible to enucleate, and amputation was accordingly performed through the lower third of the leg. The patient made a rapid recovery without complication.

Examination of the growth revealed a small, firm, encapsulated tumor, about the size of a shellbark, between the first and second metatarsal bones, which had been the growth first noticed by the patient. The large mass had apparently sprung from a rupture of the capsule of this, so that before the capsule broke the disease remained localized (Fig. 18). The beginning of the rapid growth marked the time of this rupture.

Examination of microscopic sections confirmed the clinical diagnosis.

The case is one of many that emphasize the importance of early operation in new-growths. For years this growth was probably removable without sacrifice of the foot, and certainly with much less risk of generalization than at the time when he finally submitted to operation.

VESICAL CALCULUS.

Twenty operations have recently been performed for vesical calculus. Litholapaxy offers so many advantages over other methods that in all suitable cases this procedure has been adopted. A very marked advantage is the rapid convalescence after litholapaxy. The patient is able to leave the bed on the fourth or fifth day, and to leave his room at the end of a week. The operation itself, if properly performed, is almost free from danger, and the mortality in healthy subjects very low. The operation is applicable to a wider range of cases than was formerly supposed. It has been found, for example, that litholapaxy has the same arguments in its favor in children that it has in adults, and that with instruments of the proper size no more difficulty is experienced. One patient, a boy of seven years, presented the usual symptoms of vesical calculus. A stone, about a quarter of an inch in diameter, was found, and was crushed and washed out. The patient was dismissed on the fourth day entirely well. The other cases of this operation were in adults whose ages ranged between twenty-three and sixty-two years. They all made a satisfactory convalescence. In three cases, on account of either a very high degree of cystitis, or the presence of strictures, or both, supra-pubic lithotomy was performed.

In another case, previously reported,¹ but mentioned now for the sake of its unusual clinical interest, the lithotrite failed to grasp the stone.

¹ *Annals of Surgery*, January, 1890.

The high operation was resorted to. The stone was so large that the lithotrite blades could not be separated sufficiently to seize it, though the instrument had a range of more than two inches. It was nearly encap-

FIG. 19.



Uric acid calculus, successfully removed after symptoms of stone had persisted for twenty-six years. Exact size and shape.

sulated, and was tightly adherent to the surrounding mucous membrane. The calculus weighed about nine and a half ounces. The patient made a complete convalescence with entire relief of his symptoms, which were of more than twenty-five years' duration. The exact size and shape of this stone are shown in Fig. 19, and are contrasted with those of the foreign body shown in Fig. 20, which Dr. White recently removed from the bladder, for the sake of emphasizing the importance of infection, or of its absence, in the production of vesical symptoms. In the former case the symptoms of stone dated back twenty-six years, but in all that time there had been little or no serious disturbance; the patient worked at his trade of shoemaker; his urine, while it contained a few pus cells, was otherwise sterile, and his kidneys remained sound. In the second case a high grade of cystitis was set up by the presence of a soft waxy taper introduced by the patient himself but a few days before; the urine was loaded with pus, fetid and poisonous, and a septic fever was present from the beginning. The size and

FIG. 20.



Wax taper removed from bladder.

even the shape of a foreign body in the bladder are altogether secondary, as regards the production of subjective symptoms, to the presence or absence of the pyogenic, and especially the saprophytic microbes.

The fatal results were all due to extensive renal disease, and were as follows:

J. R., aged seventy years, had suffered for many years from vesical irritability. He was extremely wasted and anæmic, and was so harassed night and day by bladder tenesmus that immediate relief was imperatively demanded. His constant suffering rendering futile all efforts directed toward improving his general condition, supra-pubic lithotomy was performed, and the stone rapidly extracted. Although but an unusually small amount of ether was given, the secretion of urine was arrested, and the patient died in three days from uræmia. The kidneys were the subjects of advanced pyonephrosis.

E. G., aged sixty-five years, was found to have a stone in the bladder, a considerable degree of cystitis, and a number of strictures. On account of the latter litholapaxy was impossible for the relief of the stone, and it was decided to perform supra-pubic lithotomy. The patient presented all the evidences of advanced senile degeneration, arcus senilis was marked, the arteries extremely atheromatous, and the patient well-nigh exhausted by the pain and frequent micturition from which he had suffered. Chloroform was administered on account of suspected kidney degeneration, and the stone removed by the high operation. The patient did well for two days, when he became delirious, and died from uræmia. At the autopsy atheroma of the vessels was very noticeable. Seven hemorrhagic infarcts of the lower lobe of the left lung were seen; the spleen was enlarged and indurated. The right ureter presented an impermeable stricture about four inches from the bladder, and the corresponding kidney was hydronephrotic. The left kidney was enlarged, the seat of calcareous deposit, with numerous cysts, and was in a condition of beginning hydronephrosis.

Supra-pubic lithotomy and prostatectomy.—J. S., aged sixty-six years. Urinary symptoms began sixteen years previously; the catheter had been required at intervals for eight years, and constantly for four years. He had lost flesh rapidly, was sallow, had chronic bronchial cough; in twenty-four hours twenty ounces of urine were passed, containing large quantities of pus, hyaline and granular casts, and vesical débris; a medium-sized stone was detected in the bladder, and an enormously large prostate was discovered. There was a mitral murmur with evidence of beginning consolidation of the right apex. The patient's sufferings were so great that operation was decided upon in spite of the unfavorable outlook. A supra-pubic operation seemed indicated in this case. The calculus crumbled under the forceps and was removed with the finger and scoop; the mucous membrane covering the prostate was snipped at different points and projecting portions of the prostate were enucleated with the finger. The amount removed weighed three ounces. The patient did well until the middle of the fourth day, when he developed maniacal delirium, refused food, and had to be kept in bed by force. He gradually passed into a condition of coma and died seven and a half days after operation. At the autopsy the wound seemed to be doing well. The ureters were distended to nearly the size of the wrist, and the kidneys were almost completely disorganized and contained multiple purulent foci.

Cystitis.—Many patients were treated for chronic cystitis. The first point observed in this service in the treatment of such cases is the overcoming of mechanical interference with complete evacuation of the bladder, by mechanical treatment, operation, or the use of the catheter, in accordance with the nature of the case.

Tenesmus is treated by local applications to the prostatic-vesical region and in some cases by overstretchings of the deep urethra and vesical neck. Of the local applications, instillations of silver nitrate, ten drops at a time repeated every second day, are found most serviceable. One per cent. solution is first used, the strength being gradually increased up to 10 per cent. Guyon's instillations of bichloride of mercury 1:10,000, ten to twenty drops at a time, are successful in many instances.

The urine is rendered sterile, or at least this is attempted, by giving salol and boric acid by the mouth, putting the patient on milk diet, and irrigating the bladder with warm antiseptic lotions. Of these, the most valuable are nitrate of silver, 1:1000, boric acid saturated solution, peroxide of hydrogen 1:6 to full strength.

Prolonged hot baths, counter-irritation, and the judicious use of salines are all useful adjuvants. Marked improvement invariably took place, and the recent cases were almost always cured.

OPERATIONS ON BONES.

For Necrosis.—The rule in this operation has been to make an incision so free that the diseased bone can be both seen and felt; chisels, gouges, curettes, and trephines are employed to attain the end of thorough removal of all diseased bone. In any extensive operation the Esmarch tube is employed, but the limb is rendered bloodless by elevation for five minutes rather than by the use of the elastic bandage. This is thought to diminish or do away with the vasomotor paralysis which sometimes follows the use of the tube, and favors consecutive oozing. The after-treatment consists in filling the cavity with sterile iodoform gauze and covering the wound with a firm antiseptic dressing. Ninety per cent. of these cases were of tubercular origin, and in these general measures were adopted in addition to operative interference.

Foot and ankle. Three cases in which the disease affected the astragalus and lower extremity of the tibia were operated upon. These all recovered, and, although the range of motion in the ankle was impaired, the joint was a useful one.

Femur. Eleven cases in which the disease affected the femur have been operated upon. Among the exciting causes were gunshot wounds, blows, and falls upon the part, unusual muscular exertion, etc.; four of the cases were post-typhoidal. All were subjected to the usual operation and all recovered with perfect use of the limb. In one case, giving a tubercular family history, there was central necrosis of the entire shaft of the femur. The operation was prolonged, difficult, and attended with much bleeding. The patient was profoundly shocked, and did not react thoroughly until the third day. From that time his convalescence was slow but uninterrupted. He recovered entirely with a functionally perfect limb.

Tibia. Seven cases of necrosis of the tibia have been treated. In two of these there was almost total central necrosis of the shaft. In operating, the periosteum was spared, the entire canal of the bone opened, and a sequestrum representing a cast of the interior of the bone was removed, together with a

large portion of the irregular involucrum. Healing was slow, a few sinuses persisting for many weeks. The patients were, however, able to walk on the limb. One case, seen early, presented a small node on the anterior face of the tibia, which had been the seat of severe pain for four weeks. The bone was trephined at this point and a focus of softening (tubercular) not larger than a pea was discovered. This was well curetted, and treated as the other cases, with perfect relief of symptoms. In another case, a lad aged fifteen years, a blow received just above the tubercle of the tibia, five years previously, had been followed by osteo-periostitis and some superficial caries. The wound had healed solidly soon after, and the cicatrix remained firm. There was some thickening and hardening of the upper end of tibia. The boy had persistent gnawing, boring pain, worse at night, and rendering his life miserable. This led to the diagnosis of pyogenic osteitis, as the head of the tibia is one of its favorite seats, and it occurs by preference in adolescents and not infrequently years after an injury. An opening was made with gouge and chisel, but no pus was found until it had been carried through the thickened bone to a depth of two and a half inches, where a collection of not more than half a drachm of pus was evacuated. The operation was followed by instant relief.

All of the patients recovered with useful limbs.

Humerus. Three cases have been operated upon for necrosis affecting the humerus; one was a case of central necrosis involving the upper half of the shaft of the bone. A sequestrum five inches long was removed, leaving a shell of involucrum so thin that splints were applied to prevent spontaneous fracture. This patient recovered with a strong arm.

Maxillæ. Five cases of necrosis of the lower jaw, and two of the upper jaw, were all due to infection with the organisms of suppuration through the cavities of carious teeth. All made a satisfactory recovery.

Patella. One case of necrosis of the patella presented himself for treatment. He suffered from suppurating sinuses of long standing, affecting the front of the knee, and following a slugshot wound. The patella was found to be necrosed, and a number of loose fragments were removed. Healing followed, with no diminution of function or usefulness.

Skull. One case of extensive syphilitic necrosis of the skull was operated upon. Several sinuses led to a number of large fragments of loose bone, constituting perhaps one-third of the frontal and parietal bones. These were removed, and mixed treatment administered. Complete healing followed. The initial lesion was contracted fifteen years before.

FRACTURES.

In the following series of fractures no case of non-union has occurred, and in every instance the patient has recovered without appreciable deformity and with perfect restoration of function, with the exception of the intra-capsular fractures of the femur and a vertebral fracture. The seat of fracture and the dressings were as follows:

Acromion process. Two cases. Velpeau bandage.

Carpus (scaphoid). Anterior and posterior splints.

Clavicle. Four cases. One of these was bilateral. A Velpeau bandage was applied to the three cases of single fracture. In the bilateral fracture no dressing was applied; the patient was kept in the recumbent position, on a hard mattress with a flat pillow, and with sandbags on either side of the head. At the end of two weeks and five days the bones were firmly united and in good position.

Femur. Eleven cases. Three of these were intra-capsular.

Extension was made by means of a stirrup, to which was attached a cord passing through a pulley placed at the foot of the bed, and bearing a weight

at the other extremity. The adhesive straps forming the stirrup were carried up as far as the upper end of the lower fragment; a roller bandage was then applied to the limb. Lateral support was obtained by means of sandbags. The amount of weight employed depends upon the degree of shortening. It is thought best to begin with moderate weight, and to measure the limb from day to day, adding gradually to the extension until the shortening is overcome. In no case was the shortening after cure greater than an inch and a half.

Fibula. Four cases. The limb was fixed in a fracture-box.

Humerus. Seven cases. One of these was a compound fracture, involving the elbow joint and requiring excision.

A drainage-tube was introduced, the wound stitched with silkworm-gut, dressed antiseptically, and placed on an anterior right-angled splint. The patient recovered with a useful limb. In two cases the internal condyle was involved. In these instances anterior obtuse-angled splints were applied. Another case presented a fracture of the internal condyle and dislocation of the elbow. The limb was dressed on an anterior obtuse-angled splint; recovery followed without loss of motion. The other cases were dressed on internal right-angled splints.

Maxilla (inferior). Two cases. Pasteboard trough, held in place by a Barton bandage.

Maxilla (superior). Two cases. In one of these the squamous portion of the temporal bone was also fractured. There was no displacement, consequently no dressing was required.

Patella. Five cases. In three of these Agnew's splint was applied. In one, both bones of the leg and the sacrum were also fractured. The leg was placed in a fracture-box. The sacrum did not need any appliance to maintain the proper positions of the fragments. All made a satisfactory recovery without any impairment of function. The two other cases were subjected to operation, one after Barker's method, and the other after Stimson's. (See January No. of THE JOURNAL.)

Radius (Colles'). Six cases. In two instances anterior and posterior straight splints were applied, in addition to pads, over the projecting fragments; in the remaining four cases Bond's splint was applied. Equally satisfactory results were obtained by both dressings.

Radius and ulna. Four cases. Anterior and posterior straight splints, the hand being in the semi-prone position.

Ribs. Seven cases. The affected half of the chest was immobilized by strips of adhesive plaster.

Skull. Nine cases. Two were simple, six were compound, and in one the fracture was at the base. All were trephined except the latter case. Two died; one of these was the fracture at the base, the other was a compound fracture, with extensive laceration of the brain substance. The other seven cases made a satisfactory recovery.

Tibia. Three cases. The limb was fixed in a fracture-box.

Tibia and fibula. Twelve cases. Four were simple, five were compound, and three were compound and comminuted.

The method used in compound fractures of the leg is that employed by Mr. Frederick Treves at the London Hospital. The limb and wound are washed and irrigated on admission; the fracture is set and the limb immobilized. If oozing continues, as it generally does in these cases, the nurse is instructed to dust iodoform over the wound at short intervals, until finally a clot of blood, impregnated with the iodoform powder, forms an aseptic scab, under which, as a rule, healing takes place as in simple fractures. The fracture-box and bichloride towels which envelop the limb are so arranged that the wound can be exposed with no disturbance to the fracture. A long series of cases under Mr. Treves' care at the London Hospital, and under Dr. White's, at the University and German Hospitals, justify confidence in this method.

Vertebra (dorsal). One case. The patient is paraplegic.

LUXATIONS.

Six luxations of the shoulder and one of the elbow were reduced under ether. With two exceptions these were recent cases, and reduction was accomplished without difficulty. One old case was of nine weeks' standing. The patient, a large, powerful man, aged thirty-six, presented the typical deformity and disability of a subcoracoid luxation. He was etherized, and Kocher's method was given a thorough trial, but without satisfactory results. Manipulation and traction in all its forms, both with and without leverage, failed to effect reduction; finally, after over two and a half hours' effort, the bone slipped into place during forcible outward traction, aided by direct pressure on the head of the bone. The patient recovered with a functionally perfect arm.

The second case was very similar in the situation of the bone, etc., but was even more unpromising, as the luxation had remained unreduced for thirteen weeks, and the adhesions were exceedingly dense. They were, however, broken up one after another by the methods described above, and the head of the humerus was finally placed in what was left of the glenoid cavity, and with an excellent range of motion.

EPITHELIOMATA.

Forty-five patients have presented themselves on account of epitheliomata about the face. The majority of these involved the lips. In such cases, if the disease had not advanced too far, a V-shaped incision was made around the lesion and the wound brought together with hare-lip pins. In other instances, where the lesions were of large dimensions, plastic operations were performed to fill in the gap left after removal of the neoplasm.

The invariable rule is to remove every portion of infected tissue, and from one-quarter to one-half inch of sound tissue beyond it. In one case, a man aged fifty-five years, the disease had existed for more than five years, during which time numerous "plasters" had been employed. The lower lip, the soft parts of the chin, and of the cheek back to the masseter muscle, had been destroyed. The alveolar border of the lower jaw was gone. For the relief of this condition the middle portion of the inferior maxilla was removed, and the lip and chin formed from skin taken from the neck and cheek. The wound healed satisfactorily and the patient left the hospital temporarily free from disease.

In another case, a man aged fifty-two years, whose upper lip had been entirely destroyed, the lip was restored by flaps taken from the cheeks. The immediate result of this operation was very gratifying, but the trouble returned some months afterward.

OPERATIONS ON NERVES.

Nerve-suture.—S. M., male, aged twenty-four years, six months before entering the hospital fell upon broken glass and sustained a wound of the left wrist. It was shortly observed that the thumb and first three fingers were paralyzed and anæsthetic. There was gradual return of motion and sensation in the ring finger, and to a much less extent in the middle finger. The index finger remained absolutely paralyzed and analgesic, although there was slight sensation on deep pressure; its skin presented atrophic changes. The thumb could not be flexed, but the power of adduction remained. The inside of the thumb over the distal phalanx was analgesic; sensation had returned in the other portions. The ball of the thumb was

much wasted. Just above the scar in the wrist was to be felt a small, hard nodule, slight pressure on which caused a tingling sensation.

An incision was made along the course of the median nerve, including the scar of the wound. The bulbous proximal end of the nerve was readily found, although displaced somewhat toward the ulna. The distal end was only found after the dissection had been carried some distance under the anterior angular ligament. It was somewhat enlarged and was adherent to one of the superficial flexor tendons. It was dissected loose, and both ends were retrenched until the sections presented a healthy appearance. The nerve was then united by four fine catgut sutures threaded on ordinary sewing needles. These sutures were passed not only through the sheath, but through the substance of the nerve. The wound was dressed antiseptically and placed in a posterior splint that strongly flexed the hand, thus relieving the nerve of tension. The following day there was slight motion in the index finger and marked increase in sensation. Healing took place uninterruptedly, and there now seems (six weeks after operation) every prospect of entire recovery of function.

The propriety of uniting divided nerves is universally conceded. Even when from original neglect of this procedure secondary changes, such as atrophy of muscles, degeneration of nerve fibres, and ascending neuritis have taken place, operation holds out a fair prospect of ultimate success. Statistics (Bowlby) show that in over 43 per cent. the results have been entirely satisfactory, while there has been marked improvement in the great majority of cases. The case reported above shows what is constantly noted, *i. e.*, return of sensation before motion; but the very rapid return of sensation, as in this instance, is, for cases of secondary nature, comparatively rare.

Nerve stretching.—Three cases of sciatica were treated by nerve-stretching. All were inveterate cases, which resisted every form of conservative treatment. Two were entirely cured by operation, one experienced marked relief. This operation is so quickly performed, is usually so devoid of risk, and is in suitable cases attended with such good results, that it should be more frequently recommended. The nerve is exposed and hooked out of the wound in a few seconds; the wounds unite promptly, requiring no drainage. These patients were kept a week in bed, a week on chairs, and were then allowed to go about as they wished.

In one case the musculo-spiral was stretched for the relief of paralysis, apparently occasioned by a neuritis of long standing, which in turn was due to an imperfectly reduced fracture. Some improvement followed the operation, and the case is steadily improving under electricity and massage.

In three cases of obstinate neuralgia an inch of the inferior dental nerve was excised, this operation being performed through a trephine opening made in the inferior maxilla. All these patients experienced relief, lasting in one case upward of a year. In all it was probable that the pain was due to a peripheral neuritis starting in the branches distributed to a carious tooth, and continuing in the main

trunk after the teeth had received proper attention. If this theory is correct, and the nerve changes have not extended beyond the seat of excision, the operation may be expected to give permanent relief.

Nerve-grafting for musculo-spiral paralysis.—Mrs. W., aged thirty-four years, some months before coming under observation had had a neuroma removed from the musculo-spiral nerve by a surgeon in a neighboring city. Following the operation there was complete paralysis of the muscles supplied by this large trunk. The extensor muscles of the forearm were atrophied when she applied for advice, and there was absolute loss of power to extend the hand.

It was decided to make an effort to suture the ends of the nerve. Accordingly an incision was made along the cicatrix of the former operation. The two ends of the divided nerve were found, but were so separated that direct suture was impossible. To fill up the existing deficiency, a portion of the sciatic nerve of a dog was employed. After the ends of the musculo-spiral had been freshened the transplanted nerve was sutured, end to end, to the former, the whole being encased in a tube of decalcified chicken-bone three inches in length. The wound healed by primary union. The patient remained under observation six weeks. During this time, however, no improvement in the patient's condition was noted.

Hare-lip.—Ten hare-lip operations were performed, the flaps being so cut that the disfiguring notch often left after these operations was avoided. There were no complications; the pins were removed in seventy-two hours, tension on the wound being prevented by rubber adhesive strips, drawing the cheeks forward. In some of the cases iodoform collodion was applied as a dressing; this, however, is stiff, difficult to remove, and favors retention of discharge along the pin tracts. Iodoform gauze, held in place by rubber adhesive plaster, cut in the form of a double paddle, each blade of which was applied to one cheek, drawing it forward, was found to be the most satisfactory dressing.

Perforating appendicitis.—C. D., male, aged twenty-five years, was seized with sudden severe pain in the right iliac fossa, accompanied with vomiting, four days before admission to the hospital.

On admission the abdomen was so tympanitic that palpation failed to convey any positive idea of the nature of the trouble, but there seemed to be some increased resistance in the right iliac region. The respirations were shallow, hurried, and entirely thoracic; the pulse was thready and above 140 to the minute; the temperature 100°. Ether was administered, an incision was made in the right iliac region, and an abscess containing three ounces of pus mixed with feces was evacuated. The appendix was greatly thickened, and was perforated. It was removed and the stump was closed with a running catgut suture. As the general peritoneal cavity was infected, a median incision was made, and the cavity was flushed with warm sterilized boric acid solution. Both wounds were drained and closed antiseptically. The abscess cavity was irrigated every three hours with boric acid solution. The fecal odor disappeared and the patient apparently improved, but the following day symptoms of sepsis reappeared, the patient became dull, and later comatose, sinking rapidly, and died thirty-six hours after operation. An autopsy was not obtained, but it is probable that the septic condition was due to collection of pus shut off by adhesions.

Inguinal Hernia.—Five operations were performed for the radical cure of hernia. In all these cases the hernia could not be comfortably

retained by a truss. It is the rule in this service to attempt a radical cure only in those hernias which give some special indication for the operation. So many cases can be made comfortable by the application of a proper truss, and, on the other hand, there are so many relapses after the so-called "radical cure," even in good hands, that it is thought best to select for operation only those cases that are unable by reason of their occupation, or owing to some peculiarity of temperament, or to some exceptional condition of the hernia itself, to wear a rubber truss.

Macewen's operation was performed in the above cases with rigid attention to all the details. The results from this operation when it is properly performed, and particularly the results in the hands of its author, are more satisfactory than those claimed for any other operation except, perhaps, that of Bassini, which has as yet been performed by so few surgeons that its true value is still to be determined. All these patients made a prompt operative recovery, and with one exception passed from observation. They were kept in bed for from four to six weeks, and were then allowed to get up, wearing a properly fitted truss. During the two months they were in the hospital there was no relapse. In the following case there was relapse due to pronounced ascites:

F. G., aged fifty-four years, suffered for some years with ascites and a large scrotal tumor on the right side. The hernia could not be retained by a truss, and was rapidly increasing in size. Incision was made over the hernial sac, and when the latter was opened the hernia was found to be of the congenital variety, the ascitic fluid draining out freely. A case of omentum the size of a fist was tied off and the stump returned to the abdomen. Macewen's operation was performed. The patient made a rapid recovery, and remained well several months; but finally the hernia recurred, apparently on account of an enormous collection of fluid in the abdomen.

COCCYGODYNIA.

CASE I.—A. D., aged ten years, three years ago in climbing upon a chair slipped and fell astride of the back. After this accident he complained of persistent pain and tenderness over the coccyx, aggravated by sitting down. There were no local signs of inflammation, nor evidence of dislocation. The coccyx was removed, and entire relief of the pain followed.

CASE II.—D. L., male, suffered extreme pain in the region of the coccyx for a long time. The coccyx was excised. Wound healed rapidly. Patient discharged on the twelfth day free from pain.

CASE III.—L. M., aged thirty-five years, a typical neurasthenic, had been subjected to a large number of gynecological operations, but had escaped oöphorectomy. She complained of a constant pain in the coccyx, aggravated by sitting down. The pain was so severe as to interfere with her work. The coccyx was removed, the wound closed without drainage, and the patient discharged on the seventh day free from pain.

NEPHRORRHAPHY.

Mrs. D., white, aged thirty-two years, complained of constant dragging pain in the right lumbar region, which was made worse by jarring. Upon palpating the abdomen a tumor was found in the right lumbar region. It was rounded, smooth, and so movable that it could be made to occupy the umbilical, and even the left lumbar regions. Her urine was normal.

The kidney was reached through a lumbar incision, and stitched to the abdominal parietes by four silk sutures passed through the capsule and the cortical substance. The wound was packed with gauze and allowed to heal by granulation, in order more firmly to fix the organ by means of the cicatricial tissue resulting. After operation the urine was high-colored and contained a large amount of albumin, but no blood corpuscles were seen. The albumin gradually disappeared and the patient made a good recovery, gaining forty pounds in weight in three months, and was discharged free from her former symptoms.

DISEASES OF THE RECTUM.

Cancer. Dilatation.—P. C., aged fifty years, came to the hospital on account of pain in the rectum, associated with difficulty in the act of defecation. His passages were unformed, and pus was discharged from the bowel. On digital exploration, a cancer was detected extending far beyond the reach of the finger and densely infiltrating the surrounding structures in every direction. As it was evident that complete extirpation was impossible the stricture was dilated with bougies, and the patient was directed to return to the hospital for the operation of lumbar colotomy when obstruction became harassing.

Cancer. Colotomy.—L. B., aged fifty-two years, sought advice on account of obstruction of the bowel, dating from a violent strain eight months before. Defecation was painful, and there was an increasing discharge of blood and pus with the stools. One month before admission the patient suffered from a violent cystitis, and noticed at that time that gas and fecal matter passed *per urethram*. He was greatly wasted on account of the disease, and the accompanying pain was very severe. On examination, the rectum was found filled with a carcinomatous mass extending beyond the reach of the examining finger, and involving the bladder and peri-rectal tissues. For the relief of the obstruction left lumbar colotomy was performed. The colon was provided with a complete mesentery, which necessitated the opening of the peritoneal cavity. The parietal peritoneum and skin were first stitched together. The gut was then fixed to this opening by a continuous suture. Great relief was afforded, and the patient returned to his home. He died three months later from extension of the disease.

Stricture. Dilatation.—Mrs. M., contracted syphilis eight years ago. There was probably a rectal chancre. Three years afterward she was operated on for fissure. Later she suffered from pain in defecation and a purulent blood-stained discharge from the bowel. Examination disclosed a dense stricture two inches within the anus that would just admit the tip of the little finger. Gradual dilatation was practised until the bowel had regained its normal calibre.

Two other cases of simple stricture were subjected to the same treatment. Both were discharged well.

Stricture. Proctotomy.—Mr. M., brought by Dr. Ayars, had suffered for some years from a gradually increasing stricture of the rectum, which had become too slight to admit the tip of the finger, and had resulted in a fistulous communication with the urethra, through which gas and fecal matter were constantly discharged. No satisfactory history as to etiology was obtainable. Syphilis seemed to be excluded; there had been no dysenteric symptoms; nor was there any history of simple ulcer. The stricture lacked the characteristics of malignancy.

It was divided, together with the sphincter and all the soft tissue, back to the coccyx. The wound was first packed around a large catheter with iodoform gauze, and was subsequently kept open by the frequent introduction of rectal bougies. Great relief was at once afforded, and there seems a fair prospect of permanent cure.

Prolapse, with hemorrhoids. Ligation and cauterization.—J. H., aged forty-six years, had suffered from protrusion of the bowel for several months. On examining the patient, he was found to have hemorrhoids in addition to the

prolapse. The hemorrhoidal masses were ligated in the usual manner. The protruded mucous membrane was burned in the direction of the long axis of the bowel with strong nitric acid, leaving strips of healthy mucous membrane between. A piece of lint saturated with oil was then placed over the prolapse and the bowel was reduced. The nitric acid caused a superficial slough, followed by sufficient cicatricial contraction to prevent a recurrence of the trouble. The patient was dismissed cured.

Hemorrhoids.—Twenty cases of hemorrhoids presented themselves. The piles were usually of the columnar variety, being both internal and external. Ligation, the clamp and cautery, and excision, are the three operations now in favor for the cure of this condition. Eighteen of the cases in this service were treated by ligation, two were excised.

The objection to the clamp and cautery is that this method affords less security against hemorrhage. Excision sometimes implies the loss of much blood. It is a comparatively slow operation, and in many cases is needlessly severe. Ligation is bloodless, rapid, and efficient. The theoretical objections urged against it have been controverted by a very large clinical experience. Every case healed promptly and uneventfully. Complications, such as tetanus, pyæmia, peri-rectal suppuration, and hemorrhage were never observed.

Before operation the bowels are thoroughly opened by a laxative followed by an enema. Previous to the administration of ether the external hemorrhoids are encouraged to prolapse by seating the patient over a pail of hot water and directing him to strain. After anæsthetization the sphincters are overstretched. The transfixion method is always employed as giving additional security against slipping of the ligature. Before tightening the threads the muco-cutaneous border around the base of the pile is incised, the ligature being made to lie in the line of this incision. After ligation the piles are cut off, usually only enough tissue being left to prevent the knots from slipping. The raw surfaces are then touched with pure carbolic acid, dusted with iodoform, and, when possible, reduced within the sphincter. An opium suppository and an iodoform suppository are then introduced into the bowel, some strips of iodoform-gauze are loosely packed just within the anus, and absorbent cotton and a T-bandage complete the dressing.

Anal Fissure.—Nine cases of this affection, all presenting the characteristic symptom of severe pain *after* defecation, have recently been operated on as follows: The ulcer was first scarified; the sphincters were next overstretched by introducing the thumbs into the anus and slowly separating them until they were in contact with the tubera ischii, and, finally, the external sphincter was divided. One patient had suffered from the affection for five years, during this time subjecting himself to different methods of treatment without relief. All of the cases of this series were rapidly and completely cured. The average time in bed was three days; confinement to room or house, six and a half days. In-

veterate pruritus ani has been cured in three extremely troublesome cases by the same method, omitting the division of the sphincter.

Anal Fistula.—Twenty-four patients presented themselves for relief from this condition. All gave practically the history of a precedent abscess in the ischio-rectal region, which either opened spontaneously or was opened by the surgeon, leaving a fistula which continued to discharge. A tubercular family history was elicited in a far larger proportion—more than two-thirds of the cases—than could be accounted for by mere coincidence.

In all of the cases a purgative is given the night before operation, and an enema the following morning. The patient is *fully* anæsthetized, many of the reported ether deaths having occurred at the beginning of operations about the anus, complete insensibility not having been produced. The anus is stretched as in fissure, the internal opening when this is present is found, and the tract leading to it is laid freely open. Every part of the wound is searched for other sinuses, which, if found, are also laid open. The wound is then touched with caustic potash, or with a 60-grain solution of zinc chloride. A suppository of 5 grains of iodoform and 1 grain of opium is inserted. The wound is thoroughly packed with gauze (preferably iodoform gauze), a T-bandage applied, and the patient put to bed.

Upon the subsequent dressing of these patients depends the final result. The essential point in the packing is to carry the initial extremity of the strip gauze packing *into the rectum*, after which the wound cavity should be gently filled with the body of the strip, care being taken to keep the edges of all the sinuses apart, so that healing must take place from the bottom of the wound only. The patients all made complete recoveries.

The average time in the hospital was about two and a half weeks, but this average is lengthened by the presence in the series of some very bad and long neglected cases. In two cases operated on by Dr. White for the late Dr. Agnew, who was present at the operations, fistulæ were dissected out completely and the wound brought together by deep and superficial interrupted sutures. Both attempts were failures, from infection of the wounds, which were reopened and packed in the usual way. The operation is the ideal one for fistula and ought to be feasible, though the practical difficulties in the way of local antisepsis are very great.

STRICTURE OF THE URETHRA.

Eighty cases of urethral stricture were subjected to mechanical or operative treatment.

In all urethral and bladder cases the patients were prepared by the administration of salol, gr. v, and boric acid, gr. x, four times a day. When there was abundant discharge the urethra was flushed out with saturated boric acid solution. The same antiseptic precautions were observed as in an ordinary surgical operation.

In but two cases was instrumentation or operation followed by chills

or rise of temperature; in both of them the symptoms subsided in a few hours. There was no case of instrumental epididymitis or cystitis. In examining for stricture the standard adopted is as follows: A penis three inches in circumference should take a 26 or 28 French sound; for each added quarter of an inch in calibre a sound two sizes larger should be taken. This represents the normal calibre and not the extent to which the urethra can be stretched. In detecting stricture the bulbous bougie was used.

A larger scale is given by some authorities, but the sizes mentioned have been found in this service to be more nearly correct. Having determined the normal calibre of the urethra, a bougie-à-boule five or six sizes smaller is passed into the bladder and allowed to remain a moment or two until spasm subsides. The instrument is then carefully withdrawn. In every case the bulb will be momentarily arrested and then pass on with a jump immediately after leaving the bladder. The cause of this obstruction is the posterior layer of the triangular ligament. Should any subsequent arrest of the bougie occur, it is due to a pathological condition—a stricture. If the instrument passes the entire length of the canal anterior to the triangular ligament without arrest or evidence of a roughness of the mucous membrane (and without any point of especial sensitiveness having been noticed by the patient), a larger size is used until the full normal calibre is reached and the possibility of stricture is excluded. Of course, if the instrument first selected cannot be passed, smaller sizes are to be employed. In case the meatus will not admit the proper instrument, a meatotomy is done at once. If a stricture is detected, the shaft of the bougie-à-boule is grasped just at the meatus and the instrument withdrawn. By measuring the distance between the point at which the bougie is held, and the bulb, the exact location of the stricture may be determined.

Strictures within four and a half inches from the meatus that do not yield to dilatation, and this is frequently the case, are subjected to internal urethrotomy by means of one of the dilating urethrotomes. In case the instrument cannot be passed on account of the small size of the stricture, a filiform bougie is introduced and a Maisonneuve urethrotome passed over this as a guide. In this manner the calibre may be increased sufficiently to admit the dilating urethrotome. After the section has been made, a full-sized acorn bougie is passed in order to be sure that all contractions have been divided. Finally, a large soft catheter is passed into the bladder, and tied in place. About the fifth day, the use of steel sounds is begun and continued at increasing intervals until the patient is cured.

Strictures of the bulbo-membranous portion are in a great majority of cases amenable to gradual dilatation. Even in those cases in which the narrowing is very great, if a filiform can be passed, the outlook for

cure by this method is favorable. Strictures that do not admit of the passage of even a filiform must be subjected to perineal section at once. In those cases in which a deep stricture does not yield to dilatation, external perineal urethrotomy is performed.

In cases where rupture of the urethra had occurred and extravasation followed, immediate perineal section was performed. An instrument was passed down to the seat of stricture, the point of this was cut down upon, and the dissection continued along in the fibrous tract representing the urethra, until a healthy portion of the canal was reached. A soft catheter was then passed into the bladder and retained. Any brawny or infiltrated tissue was incised. In two of these patients the temperature at the time of operation was 96.8° F. Both recovered. Another case was brought to the hospital in a comatose condition, supposed to be suffering from typhoid fever. Examination revealed the fact that the scrotum and lower part of the abdomen were greatly swollen and discolored. Immediate perineal section was performed, and the infiltrated tissues were incised at several points. Gangrene was already well advanced. The patient died the same day from the profound toxæmia.

Seven patients suffering from urethro-perineal fistulæ were operated upon. The sinuses were followed up to the urethra, laid open, and the stricture divided. A catheter was kept in the bladder a few days, and the wounds packed with gauze. All of the cases were discharged cured. One case of traumatic deep urethral stricture, which would only admit a filiform, yielded to dilatation. Six other cases were subjected to external perineal urethrotomy. In all these operative cases the regular use of the steel sound was continued for some time afterward.

But two patients embraced in this list have died. One has already been referred to; the other was also profoundly septic when first seen; perineal section was performed, and an instrument passed into the bladder, but it was too late to be effectual. The autopsy showed a pouched and chronically inflamed bladder, advanced pyonephrosis, and a purulent infiltration of the cellular tissue lying between the posterior surface of the pubic bones and the bladder.

CASTRATION.

Castration was performed on four patients. Twice it was necessitated by carcinoma, once for ulcerating tubercular degeneration, once for sloughing gummatous degeneration.

One patient, a feeble old man of seventy-six years, died some days after operation. The wound was healing without suppuration, and though death was probably hastened by operation, it was in this case due to general debility.

The other patients recovered promptly. The shock which it is often stated is always attendant on such operations was not noted in these cases.

HYDROCELE.

Ether may be given for this operation, but this is not necessary, and few of the cases here reported were anæsthetized.

The radical cure of hydrocele has been performed in thirty cases. The procedure which is adopted is to withdraw the fluid by a moderate-sized trocar and canula, after which a quantity of pure tincture of iodine is injected. For each ounce of the fluid withdrawn a drachm of iodine is injected. In two cases there was reaccumulation of the fluid: one was cured by a subsequent tapping and injection; the other, an old case, with a greatly thickened and indurated tunica vaginalis, was incised, the vaginal tunic was curetted and sutured to the skin, and the cavity was packed with iodoform gauze. The cure was rapid and complete in this case.

Three of these cases of hydrocele have been bilateral. Both sides were operated on at the same time. There were three cases of encysted hydrocele of the cord, two in children and one in an adult. In the former, the treatment consisted in passing a seton through the sac, tying the ends together, and applying an antiseptic dressing. A few patients refused the radical operation, and these were simply tapped. The results from the iodine injections were, with the exception of the two cases mentioned, entirely satisfactory. The pain excited was temporary; the fever and local inflammatory reaction subsided in two days; the patients were able to leave the hospital in a week, and there are no relapses to record.

Epiplotele with hydrocele.—J. F., aged twenty-seven years. The following case was diagnosticated as hydrocele complicated by hernia. He had worn a truss for inguinal hernia at irregular intervals. The day before admission to the hospital, while without the truss, he suddenly felt a pain in the lower part of the inguinal region, and found a considerable swelling in the scrotum. The tumor on examination was found to be non-resonant, gave no impulse on coughing, and was translucent at the lower portion, where palpation also detected fluid. The transparent portion of the tumor was tapped, but little fluid followed. An incision was made over the swelling, and a cyst was found adherent to the cord. There was considerable œdema of the surrounding cellular tissues. On further dissection an omental hernia was found. The omentum was ligated, the stump was stitched within the internal ring, and the wound was drained with a few strands of silk and closed. Healing was prompt and satisfactory.

HYPOSPADIAS.

Four cases of hypospadias were successfully treated by Duplay's method, modified in one instance by dissecting additional flaps from just behind the corona, by which added security against leakage was obtained at this point.

The first step in this operation consists in freeing the penis and dividing the band which curves the organ downward. After healing from this operation the glans is tunnelled and a new urethra is formed. To accomplish this a soft catheter is passed through the tunnelled glans and along the normal course for the urethra. An incision is then made upon each side of the catheter, and flaps are dissected up from each incision in both directions, *i. e.*, toward and away from the catheter. The two inner flaps are then turned in over the catheter, bringing skin surfaces in; finally the two outer flaps are sutured together over the inner flaps, bringing the raw surfaces of the two sets of flaps together, and closing-in the defect left in the median line between the edges of the inner flaps, which are never broad enough completely to encircle the catheter. The final step of the operation consists in making the newly-formed urethra continuous with the opening through which the urine flows. This is accomplished by flaps cut in the same way.

In the cases treated several operations were required, but the ultimate result justified the time and patience these cases always require.

CIRCUMCISION.

This operation has been performed on twenty-seven patients, generally for the relief of phimosis; in some cases for the cure of inveterate herpes, of recurring warts, or for the removal of an indurated chancre. Union took place promptly, and there were no complications. The dressing consists of a strip of lint about a foot long and an inch and a half wide, wrung out of one part of phenol sodique to five of water, wrapped circularly around the line of incision. This dressing is kept wet with the same lotion. The stitches are removed on the fifth day.

VARICOCELE.

The radical operation for varicocele has been performed in seventeen cases. The histories of these cases are practically uniform. All suffered from pain in the testicle; in many the gland was markedly wasted; nearly all were sexual neurasthenics. The operative procedure uniformly adopted was as follows:

The pampiniform plexus of veins was carefully exposed by an inch and a half incision, after which two sterile silk ligatures were passed around the mass about one and a half inches apart, care being taken not to include the vas deferens, which may readily be recognized by the finger, and which is kept out of the operative field by an assistant. The ligatures were tied and the intervening portion of veins excised. One end of each ligature was cut off short and the remaining two ends were tied together, so that, in addition to occluding the veins, the cord was shortened and the testicle made less dependent, which materially

aids in preventing a recurrence. Two or three silkworm-gut sutures sufficiently closed the wound, which was not drained. Healing by primary union has taken place with but one exception, in which instance a sinus formed, which finally discharged a ligature and then healed permanently. The result has been satisfactory in every instance. In some instances a complete transformation was wrought in the patient's character, every vestige of neurasthenia disappearing.

VARICOSE VEINS OF THE LEG.

Two cases exhibiting unusually well marked varices of the long saphenous vein were treated by excision of the dilated vessel. In each case an incision, eighteen inches to two feet or more in length, was made; the veins were rapidly dissected out, were ligated above and below, and the portion between the ligatures removed. In one instance this was two and a half feet in length. Modern methods make this operation no more difficult than subcutaneous ligation. It is particularly indicated when the varicose condition extends above the knee, since here it is difficult to place an apparatus which will be comfortable and will make uniform support. Varicose veins of the leg more rarely require such a radical procedure, since here a rubber or elastic bandage will usually afford complete relief.

TENOTOMIES.

During the service a number of tenotomies for the relief of deformity incident to muscular contracture were performed. The contractures were treated in some cases by massage and Swedish movements, with the application of appropriate braces or splints. In a number of appropriate cases tenotomy was performed. In talipes equinus and equinovarus, comprising the greater number of operative cases, the tendons were divided, frequently the plantar fascia also. The foot was forcibly carried to a little beyond the correct position, and was maintained in place by the application of a plaster-of-Paris bandage. On the seventh or tenth day this bandage was removed and the patient was given a club-foot shoe and was instructed to walk.

After tenotomy of the hamstring tendons, a straight posterior splint was applied. In one case of tenotomy and extensive myotomy for the relief of contracture at the hip-joint there was considerable subcutaneous extravasation of blood. This was quickly absorbed, and the functional result was satisfactory. All of these cases ran the customary afebrile aseptic course.

WOUNDS.

A large number of wounds were successfully treated in accordance with modern methods. During the entire service there was not one

case of erysipelas, tetanus, or other form of septic infection. One case was brought into the hospital suffering from a knife wound on the anterior aspect of the left shoulder. Gangrene was already well advanced, extending downward along the inner aspect of the arm half-way to the elbow-joint. The patient was suffering from diabetes. He perished from exhaustion in three days.

One case, a pistol-shot wound on the course of the femoral artery, three inches below Poupart's ligament, bled into the tissues of the leg on the third day after admission to the ward. A free incision was made, a large quantity of clotted blood was turned out, and the femoral vein and artery were exposed; both had been wounded. The artery was secured above and below, and the vein wound was closed by means of hæmostats, which clamped the rent without occluding the lumen of the vessel. In forty-eight hours the clamps were removed; this was immediately followed by violent hemorrhage. The wound was opened and they were reapplied. Two days later there was another hemorrhage. The artery and vein were then tied above and below, and the wound was packed with iodoform gauze. Fourteen days later there was another hemorrhage, apparently arterial. The femoral artery was ligated above the profunda femoris, and the wound was packed. After this recovery was uneventful. Barring absence of pulsation in the tibials after the last ligation there was no sign of circulatory disturbance in the foot except during the first hemorrhage.

PLASTIC OPERATION FOR CICATRICAL DEFORMITY OF HAND.

J. M., aged thirty-two years, presented himself at the hospital for the relief of a disabling deformity of the hand from a cicatricial contraction following a deep burn. The middle, ring, and little finger were flexed so strongly that they were in actual contact with the dense cicatrix, which occupied the whole of the inner two-thirds of the palm. The first phalanx of the index finger was also flexed to almost a right angle. The three fingers principally involved were entirely useless. The whole of the cicatrix was dissected out, exposing the sheaths of the flexor tendons. A large flap of skin and subcutaneous tissue was then raised from the left breast, turned directly back on its base, its freshened surface was applied to the area from which the cicatrix had been dissected, and its margins sutured to the healthy skin surrounding the operative field of the hand. The hand was secured in this position by a modified Velpeau bandage for eight days. The pedicle of the breast-flap was then cut across, and the hand dressed on a posterior straight splint with the fingers extended. The transplanted flap retained its vitality throughout. At the time the pedicle was divided it bled freely. In the months following this operation there was some contraction, so that the three inner fingers were again partially flexed. The patient has, however, a useful hand, and exhibits what to one unacquainted with his history would be a rare anomaly—namely, a marked hairy growth in the palm.

AMPUTATIONS.

In formal operations flaps have been made as follows: For the forearm, antero-posterior musculo-cutaneous flaps made from without inward; for the arm, modified circular flaps; for the shoulder-joint, Larrey's method; for the leg, Sédillot's method, or modified circular skin flaps; for the thigh, antero-posterior, modified circular, musculo-cutaneous flaps, the upper one being cut from without inward, and the lower one from within outward. In several cases in which ampu-

tation was performed for injury it was impossible to secure the usual flaps on account of destruction of the integument. In these cases it was necessary to modify the plan, using what tissue was available. In two cases of amputation through the thigh the wound was closed without drainage; the others were drained.

The stitches were removed, as a rule, from the fifth to seventh day after operation. Healing was usually complete at the end of two weeks, the patient being discharged in the third week.

Twenty-six major amputations were performed, distributed as follows: Forearm, 2—one for tubercular arthritis and one for gunshot wound; shoulder-joint, 2—one for sarcoma and one for railroad crush; arm, 3—one for old ununited fracture and backward dislocation of elbow, and two on account of accidents; Chopart's, 1, Pirogoff's, 1—both for crush of the foot; leg, 5—one was a double amputation, four were performed for railroad crush, and one for sarcoma of the foot; thigh, 10—seven of the latter were for extensive tubercular disease of the knee-joint and contiguous structures; two of these were children two and three years old respectively. The other operations were performed for malignant tumor of the thigh (amputation just below the trochanter), for conical stump, and for epithelioma of the leg.

But one death occurred in this series. This was in the case of a man who received a crush of the leg. As the anterior and posterior tibial vessels were not injured, an attempt was made, after consultation with Dr. Agnew, to save the limb. Antiseptic irrigations were employed, in spite of which, however, the patient rapidly became septic, and amputation at this time failed to save him.

THE DIAGNOSTIC SIGNIFICANCE OF THE VENOUS AND ARTERIAL MURMURS IN THE NECK, BASED ON EXAMINATIONS OF FIFTEEN HUNDRED PERSONS.¹

BY JAMES K. CROOK, M.D.,

LECTURER ON CLINICAL MEDICINE AND PHYSICAL DIAGNOSIS AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

THE occurrence of certain auscultatory phenomena in the great vessels of the neck has been familiar to the profession since the days of Laennec, more than seventy years ago. Their presence has generally been attributed to those pathological changes in the blood constituting the condition known as anæmia, but their exact diagnostic relations

¹ Read before the New York Academy of Medicine, June 21, 1892.

have never seemed to reach any fixed or settled status in practical medicine. The following quotations from text-books and contributions to medical periodicals published within the last fifteen years will show the diversity of opinion regarding the clinical value of these sounds, referring more particularly to the venous hum :

A. Weil¹ expresses the opinion that "neither the presence of the venous hum in itself, nor its intensity, its rhythm, nor its persistence in various positions of the head or neck, stands in connection with any particular form of disease."

Immermann² writes as follows: "Two symptoms often met with in anæmic patients are worthy of special notice because of their importance in relation to diagnosis. They are supposed, not altogether unjustly, to furnish valuable evidence of the presence of anæmia. I refer to the so-called 'anæmic murmurs' over the region of the heart, and the *bruit de diable* heard in the veins of the neck."

Gerhardt³ believes that "when the venous hum is not produced by some accidental influence, it is apt to be due to anæmia." He thinks those cases in which a thrill is appreciated by the finger are significant of anæmia and of diagnostic importance.

Guttmann⁴ states "that the typical venous hum is found only in anæmia."

Fagge⁵ makes the following statement: "It is important to notice that none of these murmurs (arterial and venous) are of the slightest significance from a clinical point of view, so far as the diagnosis of anæmia itself is concerned."

Flint⁶ writes thus: "Of special significance in the diagnosis of anæmia is the presence of certain physical signs. . . . The arterial murmur is present in only a certain proportion of cases, but the venous hum may be heard almost invariably."

Eichhorst⁷ does not attach much significance to the venous hum, as shown by the following remark: "The *bruit de diable* is often heard over the bulb of the internal jugular vein (in anæmia), but this sound is also often heard in healthy individuals."

Strümpell⁸ concludes as follows: "Murmurs in the large veins of the neck are very often heard in anæmia, either with or without cardiac murmurs. . . . We believe that the loud venous murmurs are more

¹ Auscultation of the Arteries and Veins. Leipzig, 1875.

² Art. "Anæmia," Ziemssen's Cyclopædia. New York, 1877.

³ Lehrbuch der Auscultation und Percussion. Tübingen, 1884.

⁴ Lehrbuch der klinischen Untersuchung-Methode. Berlin, 1886.

⁵ The Principles and Practice of Medicine. London, 1886.

⁶ The Principles and Practice of Medicine. Philadelphia, 1886.

⁷ A Handbook of Practical Medicine, 1896.

⁸ A Text-book of Medicine, 1887.

frequent in the anæmic than in other persons. We cannot claim, however, that they are of any great diagnostic value."

Apetz¹ claims that among six hundred and sixty patients examined by him in hospital wards, two hundred and eighty-four (forty-three per cent.) presented venous murmurs. Dividing his cases into three classes, anæmic, slightly anæmic, and non-anæmic, he claims to have discovered fifty-one per cent. of murmurs in anæmic persons, forty-six per cent. in slightly anæmic, and thirty-nine per cent. in those not at all anæmic. Apetz, therefore, concludes that "as this phenomenon is so often heard in persons who are not anæmic, it possesses very little diagnostic value, and should hardly be counted in favor of, or against, the presence of this affection."

Loomis² expresses himself thus: "The constant and important signs of anæmia are hæmic murmurs, which may be cardiac, arterial, or venous."

Dr. Bewley,³ in a paper presented to the Royal College of Physicians of Ireland, March 6, 1891, arrives at the following conclusion: More than half the young persons who are *not* anæmic have a murmur in the neck. The presence of a hum, therefore, is of no diagnostic significance in any individual case."

Vierordt⁴ says: This murmur (the venous hum) is sometimes heard in many healthy persons. . . . Strictly speaking, no diagnostic importance is to be attached to the phenomenon."

It will thus be seen that the testimony in reference to the meaning of these vascular sounds, as shown by the foregoing statements and opinions of recognized authorities, is very confusing, and in some instances absolutely contradictory. In view of this unsatisfactory state of contemporaneous evidence, the author determined, about a year since, to make a personal investigation of the subject, and ascertain, so far as examinations of a large number of persons would show, what relations these phenomena bear to diseased conditions, and what value to place upon them as a means of diagnosis. The investigation was begun early in June, 1891, and was terminated early in March, 1892. During that period fifteen hundred persons of various ages and conditions were examined. With reference to the diseases from which these persons were suffering, they may be classified as follows:

	Cases.
Bronchitis, with various complications of asthma, emphysema, influenza, malaria, etc.	611
Dyspepsia and intestinal disorders	177
Phthisis pulmonalis	122

¹ Virchow's Archiv, cvii.

² A Text-book of Practical Medicine, 1889.

³ Lancet, vol. i., 1891.

⁴ A Text-book of Clinical Diagnosis. Leipzig, 1891.

	Cases
Diseases of the heart, functional and organic	95
Anæmia and chlorosis	31
Muscular rheumatism, lumbago, etc.	41
Renal affections, acute and chronic	17
Articular rheumatism, acute and chronic	14
Various unclassified complaints, headache, nervousness, insomnia, pregnancy, pneumonia, etc.	349
Normal cases, persons presenting no appreciable patho- logical condition	43
Total, 1500.	

The great preponderance of thoracic diseases is explained by the fact that a majority of the cases were seen at the Chest clinic of the Bellevue Hospital, Out-door Department, and at the clinic for General Medicine of the New York Post-Graduate Medical School and Hospital. It should be stated here that all of these patients were under my own treatment or observation. Many of them were kept under treatment for a long period of time, and not a few were examined by successive classes at the Post-Graduate School. The instrument employed in examining the neck was an ordinary flexible Cammann's binaural stethoscope. The patients were almost invariably examined in sitting or standing posture, with the head and neck in an easy and unconstrained position; a small number only being auscultated while recumbent.

The examinations of these fifteen hundred persons, as shown in the table on the opposite page, resulted in the discovery of fifty-one cases of well-marked and unmistakable hæmic bruits or murmurs originating in the bloodvessels, which equal 3.4 per cent. of the whole number.

These figures do not include those accidental murmurs induced by improper pressure of the stethoscope, or twisting of the neck unduly, nor do they include those cases of inspiratory breathing-sounds, which in some persons so nearly simulate the *bruit de diable*. In every case of doubt the patient was instructed to temporarily suspend respiration. A study of the statistics comprised in the table will reveal the following important, and, it seems to the author, conclusive facts: Of the fifty-one cases presenting hæmic bruits, we find that forty-three were females, in a total of six hundred and eighteen females examined—slightly under seven (6.95) per cent. There were eight males who presented bruits out of a total of eight hundred and eighty-two males examined—a little less than 1 per cent. This would indicate that these vascular phenomena are about seven times as common in females as in males. Analyzing the cases with reference to the age of greatest frequency, we obtain the results, by decennial periods, exhibited on the opposite page.

These numerical data indicate that these murmurs occur with far greater frequency during early adult life than at any other period of

TABLE OF CASES PRESENTING CERVICAL MURMURS.

No.	Sex.	Age.	Disease.	Vascular sounds.
1	M.	20	Dyspepsia, cardiac palpitation	Slight venous hum right side.
2	F.	18	Chlorosis	Distinct venous hum right side.
3	M.	22	Phthisis	Faint venous hum right side.
4	M.	23	Phthisis	Distinct hum right side.
5	F.	18	Chlorotic anæmia	Slight hum right side.
6	F.	28	Dyspepsia; quite anæmic	Loud hum right, and carotid murmur both sides.
7	F.	18	Chlorosis	Loud venous hum left side.
8	F.	24	Chlorosis	Loud venous hum right side.
9	F.	23	Mitral regurgitation; chlorosis	Loud hum over right external jugular vein, arterial murmurs both sides.
10	F.	16	Bronchitis; anæmic	Slight carotid murmur left side.
11	F.	27	Phthisis	Faint venous hum (side not noted).
12	F.	38	Metrorrhagia	Venous hum right side.
13	F.	40	Menorrhagia	Slight venous hum and arterial murmurs (location not noted).
14	F.	21	Peritonitis; very anæmic	Venous hum right, and arterial murmurs both sides.
15	M.	23	Normal; no disease	Rough carotid murmur right side.
16	M.	31	Phthisis; somewhat anæmic	Slight venous and arterial murmurs both sides.
17	M.	32	Ingrowing nail	Slight venous hum (location not noted).
18	F.	24	Peritonitis	Venous hum right side.
19	F.	24	Anæmia	Faint arterial murmur right side.
20	F.	17	Debility	Slight venous hum both sides.
21	F.	25	Phthisis; very anæmic	Venous hum and arterial murmurs right side.
22	F.	17	Phthisis	Slight venous hum both sides.
23	M.	48	Empyæma	Developed venous hum and arterial murmurs while under observation.
24	F.	27	Malarial fever	Venous hum right side.
25	F.	18	Chlorosis	Venous hum and arterial bruit right side.
26	F.	21	Chlorosis	Faint carotid murmurs (side not noted).
27	F.	17	Chlorosis	Faint venous hum right, carotid bruit left side.
28	F.	36	Probably aortic stenosis	Rough bruit over right carotid.
29	F.	14	Chlorosis	Carotid and venous (location not noted).
30	F.	20	Chlorosis	Venous hum right side.
31	F.	18	Chlorosis	Carotid and venous right, carotid left side.
32	F.	18	Exophthalmic goitre	Faint carotid bruit right side.
33	F.	30	Left subclavian aneurism	Bruit from aneurism.
34	F.	16	Chlorosis	Venous hum right and left sides.
35	F.	23	Chlorosis	Venous hum both sides.
36	F.	23	Phthisis	Faint arterial right side.
37	F.	25	Anæmia	Faint venous left, carotid right side.
38	F.	16	Chlorosis	Arterial murmur and venous hum right side.
39	M.	35	Nephritis; dyspepsia	Hum over right external jugular.
40	F.	16	Chlorosis	Distinct right and faint left venous hum.
41	F.	15	Chlorosis	Loud arterial and venous right, faint left side.
42	F.	18	Chlorosis	Venous hum right side.
43	F.	16	Bronchitis; constipation	Slight right carotid bruit.
44	F.	21	Chlorosis	Venous hum (location not noted).
45	F.	16	Chlorosis	Venous hum both sides.
46	F.	22	Chlorosis	Venous and carotid bruits both sides.
47	F.	22	Chlorosis	Right and left venous bruits.
48	F.	18	Chlorosis	Slight venous and arterial murmurs both sides.
49	F.	18	Chlorosis	Venous hum both sides.
50	F.	16	Bronchitis	Slight venous hum right side.
51	F.	16	Bronchitis; anorexia	Faint venous hum right side.

Years.				Per Cent.	
Under 10	26 persons examined,	no bruits			
From 10 to 20,	135	"	22	"	(16.29)
" 20 to 30,	476	"	21	"	(4.41)
" 30 to 40,	374	"	6	"	(0.016)
" 40 to 50,	239	"	2	"	(0.008)
" 50 to 60,	155	"	no	"	
" 60 to 70,	80	"	"	"	
" 70 to 80,	13	"	"	"	
" 80 to 90,	2	"	"	"	

existence. Taking the period from fifteen to twenty-five years inclusive, we find that 39 of the 51 cases of the vascular bruits occurred during this time (more than 76 per cent. of the entire number). The youngest person presenting a bruit was a girl, aged thirteen years, with chlorosis, and the oldest was a man, aged forty-eight years, suffering from empyæma. The average age of the 51 persons with cervical murmurs was a little over twenty-three years.

A most important point for analysis relates to the diseases of those persons in whom the vascular murmurs were discovered. A study of the subject resulted as follows: Of 31 well-marked cases of anæmia and chlorosis, we find 28, or more than 90 per cent., presented hæmic bruits. The next disease in order of frequency of vascular sounds is phthisis (in which affection we know anæmia to play an important part). Of 122 cases, we find that in 8 vascular murmurs were present. Among the remaining 1349 persons examined, we find only 15 in whom a true hæmic bruit could be elicited. Several of these are marked "anæmic" as complications of some other affection, and, while the author has no numerical data bearing on this point, a majority of them might properly have been indorsed in the same way. We notice, further in the table, that in almost all of the cases of vascular bruit marked "loud" or "distinct," anæmia or chlorosis is given as the disease condition present. Of 43 healthy persons examined, only 1 exhibited a vascular murmur; in this case there was a rough carotid murmur heard on the right side only.

A question of some interest relates to the points of origin and the location of these hæmic bruits. An analysis of the facts in the table bearing on this subject shows venous murmurs present in 42 cases, as follows:

	Cases.
On right side alone, in	21
On left " " "	2
On both sides, in	12
On side not noted, in	7

Venous murmurs present without arterial bruit in 26 cases. Arterial murmurs present in 25 cases:

	Cases.
On right side alone, in	9
On left " " "	3
On both sides, in	9
On side not noted, in	4

These data furnish some curious facts. They indicate that these cervical murmurs, both venous and arterial, are frequently present on one side of the neck alone, and far more frequently on the right than on the left side, the proportion being more than 10 : 1 for the venous and 3 : 1 for the arterial bruit. The figures show further that the *bruit de diable* is considerably more common than the arterial murmur, and, also, that

each variety is frequently present in the same individual without the other. These facts were first noted by the author while engaged in the study of chlorosis in 1886, and were contained in an article on that disease contributed to the *New York Medical Journal* of June 11, 1887. Until the present analytical investigation they seem to have received no subsequent verification. With reference to the location of the greatest audibility of these cervical sounds the author may be allowed to quote from this contribution: "After numerous clinical investigations I would locate the maxim intensity of this bruit—*i. e.*, the venous hum—in a plane rather external to the course of the great vessels of the neck. The space will correspond very nearly to a triangle having a base about two inches in length formed by the upper border of the inner third of the clavicle, the sides intersecting at a point about two inches above that bone." After six years' further experience with these murmurs, the author would now add that this area might be extended inward so far as to include the space underlying the sternal tendon of the sternocleido-mastoid muscle. In many cases the bruit can be heard only in the triangular depression (when this exists) between the two tendons of this muscle. In other cases it is best heard at the outer border of the supra-sternal notch. In some cases, when the hum is not at all appreciable over the internal jugular vein, it may be heard over the external jugular, near the outer edge of the above-described triangular area. When heard over the external jugular the murmurs may be caused to instantly disappear by firm pressure with the stethoscope and arresting the flow of blood in the vessel. The *bruit de diable* is not absolutely continuous, but may rather be described as intermittent, being loudest during inspiration. This has been ascribed to an intra-thoracic suction-force which hastens the return-current of blood through the jugular veins during inspiration. Referring to the location of greatest distinctness of the systolic arterial bruit, we may again quote from the article above referred to. We there find it stated that "this area is located at the summit of the thorax in front, and the root of the neck over the carotid arteries." The author would modify this statement only by noticing the fact that these hæmic systolic bruits of anæmia seem to be transmitted not infrequently up the carotid artery of one side only, and much oftener up the right than up the left side.

CONCLUSIONS.—The important deductions from the foregoing statistical study of these vascular phenomena may be briefly summarized as follows:

1. Hæmic bruits are rarely heard in healthy persons.
2. They are not often heard in persons not showing a considerable degree of anæmia.
3. They are heard in 90 per cent. of persons showing a well-marked degree of anæmia.
4. They are, therefore, of great significance in the diagnosis of this condition.

REVIEWS.

AN AMERICAN TEXT-BOOK OF SURGERY FOR PRACTITIONERS AND STUDENTS. Edited by WILLIAM W. KEEN, M.D., and J. WILLIAM WHITE, M.D. Pp. 1209. Philadelphia: W. B. Saunders, 1892.

THE appearance of a new text-book of surgery is a circumstance of no little importance in medical literature, and an event of special interest to those who are concerned in the practice of surgery and the teaching of it.

The text-books of a science serve to mark out the grades or steps of its progress and to preserve the annals of its development. An ideal work of such a kind should be no mere collection of unassimilated facts, no simple *olla podrida* of surgical memoranda. It should be judicial, critical, and selective; it should stand between the learner and the great and bewildering field of learning, and become a medium of communication, an interpreter, a teacher.

If it aims at being encyclopædic it will fail; and if, on the other hand, its main ambition be to become the chronicler of the "last new thing," it will also fail.

A text-book of surgery professes to place before the uninstructed a picture or presentment of the surgery of the time, and if in some points it is lacking, it must be remembered that the writing of contemporary history is notoriously difficult, and that the progress of surgery has, in recent years, been remarkable and revolutionary.

The present volume is the work of thirteen American surgeons, all men of high reputation and all holding responsible posts as teachers. The individual articles are unsigned, and the volume is brought out under the editorship of Dr. Keen and Dr. J. William White, of Philadelphia. The names of these two eminent surgeons will afford a guarantee of the thorough character and sound scientific position of the undertaking, and will secure for the volume a hearty welcome at the hands of the many surgeons in Europe who are familiar with the admirable work with which the editors' names are associated.

As may be expected, the quality of the different articles varies considerably, and the fulness with which the individual subjects are discussed is not to be measured by one standard.

Undue prominence has been given to certain surgical matters, while others of less immediate interest, but of no less importance, receive too scanty a treatment.

Such discrepancies are scarcely to be separated from a first edition, and there is no doubt that in future issues these and other matters will be mended. That an entirely new book, dealing with an intricate and rapidly developing science, should be quite free from faults is not to be expected.

Criticising the work as a whole, it must be spoken of as a text-book of exceptional merit. It places before the reader a simple, concise, and scientific account of the surgery of the present day. It is written in a liberal spirit and with a keen appreciation of the rapid advance which surgery has made and is still making. It is, above all things, well up to date. There is little that is new and at the same time worthy of notice that will not be found between the covers of this volume.

The general style of the work will commend itself to students who will appreciate that its pages are designed not merely to record facts but to teach them. In the majority of the articles the teaching element—the graphic element which arranges, simplifies, and compares—is very conspicuous. Compared with other manuals of like aims and proportions, the present volume can lay claim to be regarded as one of the best text-books of surgery in the English language, and in the matter of the most recent surgery to be superior to any of them.

The work has many distinctive features, and in one particular point differs markedly from similar English text-books. The English manuals in common use deal most fully with what may be termed the rudiments of surgery, the clinical and pathological aspects of the science, and are less discursive on the question of treatment.

The present manual, on the other hand, is conspicuously concerned with treatment, and gives to the clinical aspect of the subject a comparatively slight attention. This tendency of the work—which is, perhaps, too liberally yielded to in one or two articles—is the outcome of the fact that it is in treatment rather than in clinical elaboration that the recent great advances in surgery have been made.

The spelling observed throughout the book will impress the English reader with its peculiarity, and many unfamiliar terms and expressions will remind him that the volume hails from America. Such a statement as that on page 48, in which it is observed that strips of plaster should overlap like the “clapboards of a frame house,” will probably be unintelligible.

The book opens with an admirable article on “Surgical Bacteriology,” which is clear and concise, and a type of what an article intended for students should be. This is followed by equally good chapters on Inflammation and the Process of Repair, chapters which leave nothing to be desired.

The chapters on what are known as surgical diseases, *e. g.*, erysipelas, pyæmia, rickets, etc., are somewhat scanty, and may be much amplified with advantage. Those on Tuberculosis and Rickets might well be rewritten. In the latter article cranio-tabes is described as a phenomenon of rickets.

The section on skin affections, as represented by Chapters VI. and X., is one of the least satisfactory in the book, and the last-named chapter especially is quite unworthy of the good company in which it is found. The important question of differential diagnosis in chronic ulcers of the skin is ignored, and the description of rodent ulcer, on page 470, had better have been omitted altogether.

The article on Syphilis is in every way excellent. It is concise, exhaustive and admirably arranged, and presents an ably-described account of this protean disease. In the well-illustrated chapter on Tumors we miss an account of the recent researches into the pathology of cancer, and regret the scanty and somewhat stereotyped

account of cysts. The article, however, is simply written and well arranged.

The sections on Fractures, Affections of Muscles, and Orthopædic Surgery, leave nothing to be desired. The chapters are short, but in every respect excellent. Special praise also must be given to the chapter on the Surgery on the Nerves. The chapter on the Surgery of the Vascular System is disappointing and is not up to the standard of the rest of the work. The account of the operation of Antythysis (page 235) would not be recognized by that surgeon were he to revisit the earth. The account of the Diseases of Bone forms an excellent chapter. No account is given, however, of osteitis deformans, nor of acromegaly, either in this or in other chapters. In a future edition the account of tumors of bone will no doubt be amplified. High praise must be bestowed upon the chapters on the Surgery of Joints, the Surgery of the Respiratory Organs, and of the Neck.

The articles on the Head and Spine, with which the department of Regional Surgery commences, are among the very best in the book. They are masterly monographs and present the very latest views of the surgery of the parts concerned. It may be said that the article on the Head is in its length and its detailed elaboration somewhat out of proportion to the rest of the work, but no one who reads this excellent paper can regret the indulgence allowed to the writer.

The clearly written chapter on the Spine, in which we recognize the hand of Dr. William White, is beautifully illustrated.

The clever article on the Diseases and Injuries of the Abdomen deals mainly with the operative measures which may be carried out within that cavity. The pathological and clinical aspects of abdominal disease occupy a secondary position and are very scantily considered. From a student's point of view this is to be regretted. Many of the operations described have obtained no hold in sober and established surgery, and will probably not survive the century. The section on Hernia forms the best feature of this article, although in one or two points, notably in the account of cæcal hernia, the writer is behind the times.

The Surgery of the Genito-urinary Tract and of the Female Generative Organs are dealt with in two chapters which are both of exceptional merit, being admirably written and very complete in all points. The clinical sections in these chapters are full and excellently arranged.

The volume concludes with special chapters on the Eye and Ear and a brief epitome of the principles and chief procedures of Operative Surgery. The article on Minor Surgery is especially good and well illustrated.

The work is illustrated by 37 plates and 473 woodcuts. The plates contain many figures and are all original, with the exception of those derived from Maclise.

The majority of the plates are reproductions from photographs. They are in every way most excellent and of the greatest service in giving a graphic representation of morbid processes and clinical features. There is no doubt that the plates will add greatly to the value and popularity of the work.

Of the 473 woodcuts, 52 are original, and all the rest are borrowed. This proportion is somewhat high, and it is to be regretted that the sources from which the drawings have been taken are not acknowledged in the usual place, *i. e.*, with the descriptions of the woodcuts.

In spite of the few defects to which attention has been drawn—and no first edition of a text-book was ever perfect—the work is one of which both authors and editors may well be proud and for which it would be safe to prophesy a useful and brilliant future. F. T.

CURE RADICALE DES HERNIES, AVEC UNE ÉTUDE STATISTIQUE DE DEUX CENT SOIXANTE-QUINZE OPÉRATIONS. Par LE DR. JUST LUCAS-CHAMPIONNIÈRE. 8vo., pp. 724. Rueff et Cie, 1892.

RADICAL CURE OF HERNIA, WITH A STATISTICAL STUDY OF 275 OPERATIONS. By DR. JUST LUCAS-CHAMPIONNIÈRE.

THE author of this handsome work has long been an advocate of the radical cure of hernia. In 1886 he published a small work on the subject, and many have been the papers presented by him to medical societies. He records here a large number of operations extending over a period of eleven years. While Dr. Championnière is enthusiastic over the method of operating for the cure of hernia which he has devised and perfected, he freely admits that in a personal volume of this sort there must be faults arising from detailing the opinions and experiences of one man. All will, however, admit the justice of this observation: that much good comes to science from recording such personal experiences and deductions.

It is his opinion that the proof is incontestable that the radical cure of hernia is real, not theoretical. He believes that such operations are justifiable, because those suffering from hernia are very often unable to wear trusses satisfactorily, and because the liability to dangerous strangulation from muscular efforts or even from a bad cough is always present. When such accidents occur away from centres where a skilful surgeon can be obtained the condition almost always ends in death. He is of the opinion that perhaps not more than one-quarter of those who are compelled to wear trusses find them perfectly satisfactory.

The operation which he adopts consists in the destruction of the peritoneal sac, the thorough dissection of the peritoneum from the surface of the abdominal wall surrounding the ring, and the proper bringing together of these freshened surfaces, the peritoneal edges, and the columns of the ring, respectively, with sutures so as to cause the lines of union of the peritoneum, muscular wall, and skin to be at different levels. He removes all the omentum which he can bring out of the wound, believing this to be an important step in the method. Even in umbilical hernias, whether the operation is done at the time of strangulation or in such hernias not strangulated, the results have been exceedingly satisfactory. Our author believes that in selected cases there is less chance of a return of hernia after his operation than there is of the occurrence of hernia in patients who have never previously suffered from this condition. He believes that cicatricial contraction and the hardness of the tissues resulting from the operation render liability of return less as the time after operation increases. This is especially the case in young subjects, who are recognized as the best patients to be subjected to the radical operation. He remarks on the necessity for the

operator to be thoroughly imbued with a belief in antiseptic methods; in fact, he says that he has written for only such surgeons, because while inefficient antiseptics in an amputation of a limb or of a breast simply increases the pain of the patient and lengthens the time of convalescence, a different event occurs when a surgeon opens with faulty antiseptics the peritoneum or a joint. In the latter case, an operation which is benign when absolutely aseptic, becomes a calamity under opposite conditions.

The author gives three grand indications which it is always necessary to meet as far as possible, since the more successful the surgeon is in these respects, the more chance is there for the radical operation to reach perfection.

It is necessary to modify or destroy the serous membrane where it is funnel-shaped at the inner opening, because the obliteration of this oblique, smooth surface prevents the tendency of the abdominal contents to slide into and continually make pressure at this point. It is necessary to construct, at the weak place in the wall, rings, and canal, the most resisting cicatrix possible, in order to create a barrier which will oppose an obstacle to the abdominal viscera which tend to extrude by forcing their way through the abdominal wall. If it is possible to do so, those portions of the hernial contents which are not necessary to the normal functions of the patient should be removed. This applies particularly to his method of excising the omentum, which he draws forcibly through the opening in order to cut it off as high up as possible. The neck of the sac is closed by a ligature as far up as possible in order that no dimple be left on the inner surface of the abdominal wall. Separation of the peritoneum from the area around the abdominal ring should be done extensively, as the more efficiently this is accomplished the more solid is the cicatrix likely to be. The cicatrix is made strong by deep sutures and methodical compression of the wound.

After discussing the principles of this method, Dr. Lucas-Championnière enters into elaborate and interesting descriptions of the methods of extirpating the sac, destroying the funnel-like dimple in the peritoneum at the site of the internal opening, and resecting the omentum. The steps are illustrated by most comprehensive and intelligible diagrams. Then follow a description of the instruments employed and a consideration of the modifications of the operation demanded by the various forms of hernia. Complications, dressings and anæsthesia each receive attention, and are discussed in the author's characteristic manner.

He finds little necessity for his patients to wear a truss after the operation. He believes that, when the surgeon has accomplished the steps of the operation as he expected, the cured patient needs the truss no more than a patient who has never had hernia; in fact, its use is prohibited. In certain unsatisfactory cases a truss is needed, but then it is of a special form and does not press upon the cicatrix, but on the wall above the scar.

The volume has attached, as a final chapter, a detailed table of the 275 operations done for radical cure of non-strangulated hernia.

So much has been written of late on operations for the radical cure of hernia, and the variety of procedures advocated has been so great, that a work written by one so competent to teach is most timely and instructive. The attention of the reader is fixed by the personality of the writer shown on every page. The fact that the volume deals only with

the one method, which the author himself has found serviceable, is scarcely a disadvantage, when the subject is presented in such a careful and scientific spirit. The extraordinarily good surgical teaching which Dr. Lucas-Championnière has given the profession, in other directions, renders his words on the subject of hernia more than usually convincing.

J. B. R.

ABDOMINAL SURGERY. By J. GREIG-SMITH, M.A., F.R.S.E., Surgeon to the Bristol Royal Infirmary; Lecturer on Surgery, Bristol Medical School, etc. Fourth edition. Pp. xviii., 799. London: J. & A. Churchill, 11 New Burlington Street. 1892. Bristol: J. W. Arrowsmith, 11 Quay Street.

THE appearance of four editions of a surgical monograph in a little over four years, and the simultaneous translation of the present edition into several foreign languages, afford ample proof of its popularity as well as intrinsic excellence. That the original work has received many additions is evident from the fact that it has been enlarged to the extent of two hundred pages.

In the section on nomenclature we note with approval the fact that the author has formally adopted the term "coeliotomy," discarding "laparotomy." His advocacy of its use will do much to favor its general introduction. The general directions with regard to abdominal operations have been thoroughly revised, and such changes appear as are warranted by recent advances in technique.

Section III. does not show many additions, and is still open to some criticism. We have always been of the opinion that too little space is allotted to the description of the removal of inflamed and adherent tubes and ovaries. Considering the importance of the operation and the many possible complications, the beginner is not assisted as much as he might be by the brief reference to them. Nothing is said about the prevention of oozing and the subsequent formation of adhesions by packing raw surfaces within the pelvis with iodoform gauze. One cannot but feel that the disturbances following the removal of the adnexa, especially persistent pain and hemorrhage, are somewhat undervalued. Without desiring to be hypercritical, we would call attention to the fact that there has been a vast improvement in the technique of vaginal hysterectomy since the appearance of the first edition, and that not only the description of the operation, but the section on drainage, is susceptible of still further revision. Strange to say, there is not a word about the treatment of the stump and the plugging of the wound with iodoform gauze, which we, in America, regard as the most important steps in the operation. The use of the drainage-tube after vaginal hysterectomy is rather out of fashion. One may pertinently ask: "Does the subject of vaginal hysterectomy really belong in a work on abdominal surgery?" This question is still more pertinent with regard to the added section on high amputation of the cervix.

We miss any description of the combined operation, the results of which certainly entitle it to some consideration. Again, under the section on hysterectomy (more properly, supra-pubic amputation) for myoma, the author maintains absolute silence with regard to abdominal

extirpation of the fibroid uterus—an operation that has rapidly won favor in Germany and America. But, doubtless, these omissions, as well as the failure to refer to the advantages of Trendelenburg's posture, will be corrected in a subsequent edition, though new ideas ought to travel more rapidly.

Laparo-elytrotomy should be omitted from the chapter on operations on the gravid uterus, as it has long fallen into disrepute. The section on the operative treatment of rupture of the uterus remains unchanged, although it is a subject that has received considerable attention from obstetricians since the appearance of the first edition. The important chapter on ectopic gestation shows internal evidences of careful revision, likewise Section VI., which deals with operations on the stomach. Section VII., on intestinal operations, has been rendered especially valuable by the introduction of all the more recent methods of surgical technique.

Section XIII. contains an exhaustive description of the operation of supra-pubic cystotomy, and concludes with a short section on partial resection of the wall of the bladder, in which, by the way, no mention is made of Pawlik's remarkable case.

The concluding section, on operations for abdominal injuries and inflammations, covers a wide range of subjects—from gunshot wounds to appendicitis—and is full of valuable suggestions. While each edition of this admirable work is a distinct improvement upon its predecessor, and their rapid succession is a proof of its excellence, one cannot avoid the thought that perhaps new editions have appeared too rapidly for the advantage of the book. The lapse of a little longer time between them would permit not only revision, but a more thorough review of the extensive literature of abdominal surgery. This criticism applies principally to operations on the female pelvic organs. While the omission of the bibliography is justified for reasons given by the author, more copious foot-notes are desirable. It is only because we wish to see this work remain, as it has long done, a superior treatise on abdominal surgery, that we have ventured to suggest certain improvements which would add to the value of a future edition. To dwell upon its existing merits would be only to repeat the praises of former reviewers. H. C. C.

A PRACTICAL TREATISE ON DISEASES OF THE SKIN. By JOHN W. SHOEMAKER, A.M., M.D. Second edition, revised and enlarged, with chromo-gravure plates and other illustrations. New York: D. Appleton & Co., 1892.

DR. SHOEMAKER is well known for his contributions to dermatology. In this second edition of his treatise on skin diseases we note considerable new matter and a general revision of the first edition, the result being a better book in every way. The author writes *currente calamo*. Condensation is neither practised nor aimed at, paragraphs sometimes being occupied, it seems to the reader, where sentences might almost suffice. This tendency to verbosity is notable, and in another edition we hope to see the volume pruned, thereby making it more valuable as a work of reference.

The chapter on the general pathology of the skin has been augmented and improved by judicious remarks on the bacteriology of cutaneous diseases, a department of dermatology that has advanced remarkably in the past few years. A useful chapter has also been added on the proper employment of electricity, a subject which heretofore has received too little attention in the text-books. Good advice is given concerning the importance of diet in cutaneous medicine, but the author, we think, speaks too positively on some questions in order to carry the point; thus, it seems like forcing the importance of diet to read that lichen planus (a well-recognized neurotic affection) "is often due to impaired digestion;" that "herpes zoster calls for an abundant supply of fatty articles of food," when it is well known that this disease pursues an acute self-limited course and is not apt to recur, and that "nutritious food should be an essential part of any plan of treatment in syphilis."

The nomenclature, we are pleased to note, is sound, and is entirely in accord with that employed by the best teachers of the world. The classification also can be commended as the best, being that of Hebra. It presents the subject on the basis of pathology, which has the merit of being a stable foundation. But we must protest against regarding neoplasms as synonymous with "tumors," in which class is placed lupus erythematosus, a disease that never shows itself in any form suggestive of a tumor. The author separates completely lichen planus from lichen ruber, one of the points of difference being, it is stated, that in lichen planus there is little or no itching, whereas in lichen ruber this symptom is intense. Surely, simple lichen planus may also itch violently. The acute form of lichen planus should have been alluded to. Herpes iris receives only brief notice, between herpes facialis and herpes progerialis, with which affections it has no close relationship. Herpes gestationis is justly regarded as the dermatitis herpetiformis of pregnancy. Hydroa is made a distinctive disease, but the description fails, it seems to us, in differentiating it from pemphigus, herpes iris, and dermatitis herpetiformis. It is questionable if the term hydroa is at all needed in dermatology. Inflammatory fungoid neoplasm, or, better, granuloma fungoides, receives rather scant attention, the disease being one about which much has been learned of late. Paget's disease of the nipple is discussed with eczema of the breast, and, likewise, hardly receives the mention it deserves.

We miss reference to keratosis follicularis, erythrasma, actinomycosis, and angio-keratoma, diseases which lately have been considerably written about. On the other hand, we note full descriptions of Savill's variety of dermatitis, recently described, and of dermatitis herpetiformis.

On the subject of therapeutics the author speaks highly of lanolin, and is opposed to the use of petrolatum as a base for ointments where penetration into the skin is demanded. The oleates, about which the author has written at length elsewhere, are regarded as most valuable remedies, and he remarks that "the professed lack of faith in and condemnation of them by a few are entirely due to the fact that they have been used improperly and hastily, and erroneous conclusions drawn from imperfect experience with them." Of hydrastine hydrochlorate, we are told that good results may be expected from it in hyperidrosis, seborrhoea, acne, eczema, and ulcers, in the strength of from two to six grains to the ounce of water; and that the fluid extract and extract of ery-

throxylon coca will produce a sedative action upon irritable conditions of the integument. Naphthol is highly extolled as a deodorant, detergent, and stimulant. Hamamelis is considered a valuable remedy, acting as an astringent and sedative, useful in eczema, erysipelas, rosacea, seborrhœa, and varicose ulcers. Aristol and peroxide of hydrogen are esteemed, and massage as a method of treatment in numerous diseases is well thought of. On almost every page one may note that the author inclines to be enthusiastic over the power of drugs to cure. Most of those referred to receive more or less praise, the tendency being toward the use of the superlative rather than the comparative degree in discussing the subject.

Throughout the volume formulæ are so freely introduced that the formulary given at its close seems unnecessary. To give a series of diverse formulæ, merely stating that they are sometimes of use in this or that disease, proves of no practical value to the physician. For prescriptions to be of service, it must be stated for what variety, form, and stage of the disease they are applicable. Special knowledge is required for the successful treatment of skin diseases, and this consists largely in knowing when and how to use the remedies. This information the ordinary formulary does not give, and hence its comparative worthlessness to the general practitioner. Therapeutics in this form are apt to do more harm than good. Several excellent photographs grace the volume, which is handsomely got up by the publishers. L. A. D.

HYGIENE OF THE SICK-ROOM. By WILLIAM B. CANFIELD, A.M., M.D.,
Lecturer on Clinical Medicine and Chief of Chest Clinic, University of
Maryland, etc.

THE aim of this little book, which is a brief exposition of the modern views of bacteriology in their relation to the causes and prevention of disease, is not fully demonstrated by its title. The hygiene of the sick-room in reality involves attention to many details not properly within the scope of the subjects to which the author confines his remarks.

This manual, as the author states, is the outcome of a series of lectures delivered before the University of Maryland Training-School for Nurses, and is intended for the use of "nurses and other intelligent women." It is prefaced by a chapter on the methods of bacteriological classification and investigation, and, in a series of succeeding chapters, considers the subjects of infection and disinfection in their application to the management of the individual diseases attributed to the action of germs. In closing, the author gives some general hints on the subject of ventilation and heating, immunity and protection from disease, and the proper selection and preparation of food.

The author falls at times into the common error of using terms and explanations too technical for his class of readers, and for this reason his book is probably best adapted to teachers of nurses and to the select few among nurses whose educational qualifications are sufficient to make them discriminating in their work. Its concise presentation of a very important theme should extend its usefulness to physicians as well as nurses.

A. M. F.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL
AND HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

USELESS OR DANGEROUS MEDICATION IN ANGINA PECTORIS.

DR. HENRI HUCHARD recalls the fact that for more than ten years he has employed the iodides in from fifteen to forty-five grains for a daily dose, and continued for several years, the attacks being relieved by nitrite of amyl or nitro-glycerin. Among the useless or dangerous medications he would cite: 1. Cardiac tonics. The anginas are almost always of arterio-sclerotic origin, where the pulse tension is already high, therefore digitalis and ergot are contra-indicated, while sparteine and convallaria are useless. Caffeine and strophanthus may, in some cases, produce favorable results. 2. Belladonna and bicarbonate of soda he regards as not only useless but harmful; they are useless because the bicarbonate of soda has no influence upon the atheromato-sclerotic processes, and they can be harmful because the belladonna excites the cerebral centre of the pneumogastric and the intra-cardiac regulatory apparatus and produces a contraction of the arteries; in toxic doses only, does atropine give rise to the opposite phenomena. 3. Electricity, untrustworthy or dangerous, is almost always contra-indicated, and should only be used in those cases when there is threatening syncope, then cutaneous electrization (faradization) of the præcordial region. It is not to be recommended, because it can instantaneously stop the heart contraction, and it avails naught against the pain which it may even provoke. The constant current, far from being subject to the same dangers, has produced some good results, but the cases are insufficient to deduce therefrom the indications of a special medication. The faradic currents may be harmful, the constant are usually useless. 4. Cocaine, inhalations of oxygen. The former is dangerous, in that it produces vaso-constriction and cerebral ischæmia, thus predisposing to syncope; the inhalations of oxygen are useless, and it is readily seen that they cannot act quickly

enough to suppress an attack. 5. Antipyrine, as well as similar drugs, as phenacetine and exalgine, have no favorable action upon the circulation, and if it be true that they determine a dilatation of the cutaneous vessels and a contraction of the central arteries, they will be absolutely contra-indicated in the treatment of angina pectoris. 6. Bromide of potassium: its efficacy has been exaggerated in angina due to the condition of the coronary arteries, when a daily dosage of sixty grains has not been exceeded. Larger doses may rapidly produce a slowing, with weakening of the cardiac action, contraction of the smaller vessels, elevation of the blood-pressure, and, in his experience, are without the good results claimed by others, especial objection being made to the association of the three bromides. 7. Chloral, paraldehyde, sulphonal, urethane. As an hypnotic and anæsthetic, chloral can be used. It determines not only a slowing but a real enfeeblement of the cardiac contractions; in large doses it is a cardiac poison, and can stop the heart in diastole, which forbids its use in degeneration or debility of the heart. It should not be ordered in massive doses, fifteen to thirty grains being ordinarily sufficient. Paraldehyde has been used without certain result, the causes being inconstancy of its action, unfavorable properties as regards respiration and the composition of the blood. Sulphonal acts very slowly; even if it is harmless, the attack will be ended before the remedy takes effect. Urethane presents the same objection, with the additional one of uncertainty of its action. 8. Salts of potash. One recognizes their unfavorable action upon the cardiac muscle, and, besides, if the kidneys act unfavorably (and renal insufficiency is frequently met with in those suffering from arterial sclerosis), they incompletely eliminate all poisons coming from without or formed in the organism. 9. Bloodletting is slow in its results, and may prevent, to a certain extent, the attack, but is incapable of curing it. General bloodletting favors syncope, and for this reason should be absolutely condemned. 10. Chloroform inhalations are to be considered when nitrite of amyl or morphine injections have completely failed. Then the inhalations should be short, interrupted by free inspiration of air, with finger on the pulse and watching the face of the patient. 11. Various means, as inhalations of ether, ingestion of ice, immersion of left arm in hot water, are all uncertain, are not applicable, and do not succeed, save in the pseudo-anginas. For his own treatment, stated at the commencement of this paper, it can be said that it combats the pain, it is directed against the arterial sclerosis the development of which prepares for the degeneration of the cardiac muscle, against the lesion of the coronary arteries, and especially against the cardiac ischæmia which constitutes the principal and only danger of this formidable combination.—*Revue générale de Clinique et de Thérapeutique*, 1892, No. 39, p. 609.

ALUMNOL.

DRS. R. HEINZ and A. LIEBRECHT present an interesting contribution in this new astringo-antiseptic. Taking the idea from dermatol, it is sought to unite an aromatic reducing acid to a specifically working base. After two years experimentation the most suitable combination appeared to be the aluminium salts of the naphthol sulpho-acids. Alumnol is such a salt (with 5 per cent. aluminium and 15 per cent. sulphur). This salt is a fine, white, non-hygroscopic

powder, easily soluble in cold water; solutions of 40 per cent. and over, made with hot water, remain without precipitation on cooling. It is soluble in alcohol, giving rise to a beautiful blue fluorescence, also in glycerin, but not in ether. On considerable exposure to the air it becomes darker in color; it is of acid reaction; it precipitates albumin, differing from other astringents in that the resulting precipitate again dissolves in the excess of albumin; thus this remedy will act deep in the tissues, and not superficially as do other astringents. Laboratory experiments, to determine its antiseptic value, showed that a 1 per cent. solution after twenty-four hours destroyed the bacilli and spores of anthrax, pyocyanus, prodigiosus, etc. Of greater power is alumnol to check the development of bacteria; $\frac{1}{100}$ of a 1 per cent. solution can interfere with the further growth of anthrax-, typhus-, cholera-, Finkler-Prior-, pyocyanus-, prodigiosus-, staphylococcus-cultures; a $\frac{1}{10}$ of a 1 per cent. solution can absolutely prevent their growth. The astringent action can be demonstrated in from $\frac{1}{100}$ to 1 per cent. solution upon the mesentery of a frog. Stronger solutions, as of other astringents, are irritating; the first appearance of this symptom is with a 5 per cent. solution, while a caustic action has not been observed with 10 per cent. solutions.

In surgical practice, in wound cavities and suppurative surfaces, the supuration is promptly checked; then it is used by irrigation in $\frac{1}{2}$ to 2 per cent. solution. In small abscesses and fistulous tracts a 10 to 20 per cent. solution produces caustic effects with rapidly cleaning and healing. Ulcers with sluggish granulations are benefited by stimulating solutions and 3 to 6 per cent. ointments. In gynecological practice, especially in gonorrhœal endometritis, this remedy is of value, used in 2 to 5 per cent. pencils; for speedy and radical results the percentage may be increased to 10 or 20. For tamponade of the uterus a gauze dipped in a 10 to 20 per cent. solution can be used. As a vaginal douche, $\frac{1}{2}$ to 1 per cent. solution, twice daily, has given good results. In dermatology, in plaster-mull and varnish—the latter especially, giving a protective dressing. In chronic cases a considerable concentration, 10, 20, to 50 per cent., is advisable. In gonorrhœa in men, according to Chotzen, a 1 to 2 per cent. aqueous solution, injected three or four times daily, causes the gonococci to completely disappear within three to six days. To avoid irritation of the mucous membranes the strength of the solution must then be diminished. In otological practice, as a powder, it has been found of value in otitis media purulenta and similar conditions. In ophthalmological practice, as a 4 per cent. solution, it has been employed in blennorrhœa for the preliminary cleansing of the eyes of pus, in order to make use of nitrate of silver.—*Berliner klinische Wochenschrift*, 1892, No. 46 S. 1158.

DIGITALINUM VERUM.

DR. FRANZ PFAFF, recognizing the uncertainty of the action of the various digitalins, which has forced many practitioners to discard them in favor of the tincture or infusion, has carried out some experiments with this substance which is prepared from the digitalis purpurea. He has administered about a thousand single doses to sixteen patients, and has not as yet observed any cumulative action. He believes this to be not only more rapidly absorbed,

but as well, rapidly eliminated. The daily dose is from one-eighth to three-quarters of a grain, which, indeed, can be administered subcutaneously in diluted alcohol to which cocaine is added.—*Correspondenzblatt für Schweizer Aerzte*, 1892, No. 22, S. 696.

MASSAGE IN MEGRIM.

MR. A. SYMONS ECCLES has treated fourteen cases of severe megrim which were under his constant observation. So far as the drug treatment has availed he has found that largely diluted doses of hydrochloric acid given with or directly before food, followed by a capsule containing β -naphthol shortly after food, are useful in preventing the dyspeptic conditions which he believes are causative of paroxysmal hemicrania. If it is true that the occurrence of megrim is due to disordered digestion, in the sense that, coupled with sluggish portal circulation, there is an interference with the quantity or quality, or both, of the gastric secretion, that with this insufficiency of secretion there is also inactivity of the gastro-intestinal motor apparatus, permitting the generation, accumulation, and absorption of toxic matters in excess, so that the liver is unable to cope with them either by arrest, combination, or secretion with bile, it seems that the indications for treatment are to improve the circulation through the chylo-poietic viscera, and at the same time to aid the activity of the liver in its function as a policeman in guarding the system against the intrusion of evil-doing leucomaines and ptomaines, while such a diet is prescribed as shall be easily assimilated, demanding as little activity and richness of secretion as possible. These indications are met by: 1, rest in the recumbent position; 2, massage of the abdomen; 3, general massage of the whole body at least once daily; 4, the dietetic treatment—milk, green vegetables, etc.—*The Practitioner*, 1892, No. 291, p. 161.

THE TREATMENT OF INEBRIETY.

DR. NORMAN KERR contributes a very interesting paper upon this ever-timely topic. He cites the failure of all moral, ecclesiastical, and legal measures even when supported by public opinion. He believes that there is a gradually-increasing amount of success achieved from the intelligent appreciation of the etiological and pathological relations of inebriety. Our first efforts must be concentrated upon the immediate and acute symptoms by rest, nursing, and light but sufficient nutriment, with withdrawal of the poison. The next undertaking will be elimination of the alcohol from the system, and the correction of the morbid condition of the organs and structures. The ultimate hope of a permanent cure will lie in the restoration of will-power. In all the progress toward recovery, while medicinal remedies are useful, hygienic, intellectual and moral influences will play an important part.—*The Medical Magazine*, 1892, No. 3, p. 258.

A CASE OF ETHER DIPSOMANIA.

DR. JULES CHRISTIAN reports a rare case where death, following epileptiform convulsions, resulted after repeated attacks for more than sixteen years. The attacks generally began with symptoms of malaise, inappetence, sensa-

tions of weight at the epigastrium, coated tongue, restlessness, anxiety, irritability, and complaints of palpitation of the heart. The patient then purchased ether, hailed a *fiacre*, made himself comfortable, and inhaled his favorite liquid. If the process was carried only to the stage of exhilaration he became gay, sang, laughed, and became talkative, and amused himself as a *gamin*. If he stopped at this point he became calm after a series, more or less prolonged, of extravagant actions. Generally, however, the inhalations were continued and the excitement became more active, and he fought with the coachman and bystanders until subdued. The habit was acquired during his service with the ambulance train in the Franco-Prussian war, and apparently no treatment save incarceration at Charenton was of value.—*Journal de Médecine de Paris*, 1892, No. 45, p. 516.

THE THEORY OF PSYCHO-THERAPEUTICS.

DR. VAN EEDEN, by the term psycho-therapy, wishes us to understand : every method of healing which opposes disease by psychical means, or by the intervention of psychical functions. Recognizing suggestion as the principal psychical process by which a sufferer can be aided, he insists that we must suggest without air of authority, and cure without heightening suggestibility, because permanently heightened suggestibility means a diminution of psychical cohesion, and consequently a weakening of the power of resistance. The centralization of the psychical functions must be encouraged, for the psyche is composed of an agglomeration of forces working together, and order, equilibrium, and homogeneity of government are indispensable for the vigor and resistance of any organism. It is therefore evident that the seat of direction must lie in the soul's conscious state, and the executive authority in conscious volition. The principles actuating a therapist should be, then, slight receptivity for external impulses, a centralization as powerful and an ideo-plastic force as strong as possible, the last being strongest with the uneducated, with children or hysterical subjects ; whereas with such, suggestibility and receptivity are generally large, and centralization very insignificant. The best means to employ are exercise, education, and training. From his experience he holds a firm conviction that psycho-therapy, in this way developed by a larger number of superior minds, will prove to be an immense advancement in the noble art of healing.—*The Medical Magazine*, 1892, No. 3, p. 232.

RECENT PHYSIOLOGICAL AND CHEMICAL RESEARCH IN THE QUESTION OF ANÆSTHESIA.

MR. DUDLEY WILMOT BUXTON introduced the discussion at the annual meeting of the British Medical Association for 1892, summarizing as follows: 1. Chloroform in anæsthetic doses, when no asphyxial conditions are present, exerts an effect directly upon the heart muscle, leading by its weakening to a simultaneous cessation of the action of heart and respiration. 2. In cases where respiration persists after, apparently, the heart has ceased to beat, when artificial respiration fails to restore the natural respiration, death is due to the direct toxic action of the chloroform upon the heart. 3. That the fall

of blood-pressure is probably due primarily to the direct action of chloroform upon the heart muscle. 4. That, even when slight blood-pressure fall may be protective, it reveals a condition of the circulatory system itself a source of peril. 5. That impurities in the chloroform have some, but what effect we do not at present know. 6. That the elimination of these impurities will not necessarily remove the perils of chloroform. 7. That the experiments upon the lower animals as regards shock are not a reliable guide, taken by themselves, in studying shock in human beings.

DR. LAWRENCE TURNBULL stated that from inquiries, he and Dr. T. Melvin Lamb, of the Surgeon-General's Office, Washington, had concluded that there were fewer deaths from ether than from chloroform, but that it was necessary to watch both the respiration and the heart.

A note by MR. THOMAS S. CULLEN, of the Gynecological Department of Johns Hopkins University, answers the question of how much chloroform should be given, by stating that the pupil should be always kept well contracted. The rule is only to be deviated from when the abdominal cavity is to be irrigated with the salt solution. Then, about two minutes before irrigation, the anæsthetic is pushed until the pupil is midway between contraction and dilatation; as soon as the solution is poured into the cavity the pupil again contracts on account of the stimulant action. Sometimes, when the pupil is midway between contraction and dilatation, one may be in doubt as to whether the patient has received more than the desired amount or not enough. On ceasing the administration for a few seconds, if not enough has been given, the pupils will dilate and the patient may stir; if more than desired, the pupils will contract.

DR. RALPH STOCKMAN believes that in heart failure during chloroform inhalation the injection of ether is probably of value, but in respiratory paralysis it must aggravate the condition.

MR. RUMBOLL believed that it was safer to precede the administration of ether by nitrous oxide gas than to give ether alone as all struggling was avoided; undoubtedly, to patients suffering from a weak heart, the violent struggling, when ether was being given alone, must be a source of danger.—*British Medical Journal*, 1892, No. 1661, p. 933.

THE TREATMENT OF TETANUS.

PROF. PETER ALBERTONI has collected the cases of tetanus reported during the last decennium, 176 in all, of which 139 were cured (78.9 per cent.). The treatment was varied, comprising all the well-known methods. This collection of cases shows that the disease is not so fatal as is commonly supposed, and also that it has been cured by many and diverse remedies, or that it "may get well of itself." The opinion is as old as Hippocrates, that a case of tetanus, which has successfully outlasted the first week, has greater chances of recovery. Reviewing the recent work which has been done with antitoxin, he calls attention to the antiseptic local treatment which these patients received. From the clinical standpoint, he believes that the best results are obtained from chloral, and, judging from the observations of Carpenter and Todd, and of Gaglio, the application of ice to the spine would be of material assistance.—*Therapeutische Monatshefte*, 1892, Heft 9, S. 437.

SEVERE TRAUMATIC TETANUS CURED BY REST AND ABSOLUTE ISOLATION.

DOTT. ANTONIO BEORCHIA-NIGRIS reports a single case where the seat of the infection was an eczematous ear. There was marked trismus, *risus sardonius*, general muscular rigidity and tonic contractions following slight external stimulation. Removal of the lobule was deemed advisable, which was done under antiseptic precautions. An abundant liquid diet of eggs beaten in milk, a little Marsala wine, calomel and jalap to combat constipation was advised, with rest in bed, absolute isolation in a darkened room, the ears being stopped with cotton. The result was complete recovery in twenty-one days.—*Gazetta degli Ospitali*, 1892, No. 121, p. 1126.

SALOL IN THE ORGANISM.

DR. PAUL CORNET has carried out some valuable experiments to ascertain whether salol is absolutely and exclusively decomposed in the intestine. Making use of dogs, it was found that in an hour, at least, the decomposition is exclusively in the intestine, but this statement in regard to intestinal decomposition of Mencke and Salhi ceased to be true at the end of two-and-a-half to three and one-quarter hours after the ingestion of thirty or forty-five grains of salol. It was also found that there was present, in the feces and in the intestine, undecomposed salol, determined by Lépine by the microscope, and by the author by analysis. As to the exclusive action of the pancreatic juice, admitted by Sahli and Lépine, it is strongly contestable, for salicylic acid has been found in the stomach. Besides, Papuli, Renzi, Réale, and Gley have weakened, for other reasons than the author's, the pancreatic theory. Finally, Sievers and Ewald have proposed this drug for determining the motor power of the stomach. Its slow decomposition in this viscus seems to destroy the value of this procedure. Conclusions: 1. That salol at first decomposes in the intestine. 2. In the stomach salicylic acid is found two or three hours after the ingestion of thirty to forty-five grains of salol. 3. Salol is not completely decomposed in the intestine, for it is found in the feces.—*Le Progrès Médical*, 1892, No. 44, p. 320.

THE MEDICAL TREATMENT OF ACUTE TONSILLITIS AND PHARYNGITIS.

DR. JAMES E. NEWCOMB has made a comparative study based upon one hundred and sixty-nine cases. Under the title of pharyngitis he makes reference only to the various aspects of the catarrhal inflammations, and under tonsillitis he includes the lacunar and parenchymatous forms of the disease, and as well, peri-amygdalar cellulitis or quinsy. He concludes as follows: 1. In salol we have a remedy which, in the vast majority of cases, will give relief quicker than any other; where it utterly fails, as it may occasionally, tincture of the chloride of iron with potassic chlorate seems to be the best substitute. This latter combination finds its best field in those patients who have already had many previous attacks, and in which there is more or less of an interstitial deposit of connective tissue in the mucous membrane. Salol is, to most patients, far more agreeable than sodium sal-

icylate, and vastly more so than the nauseating guaiac. 2. If peri-amygdalar infiltration has already set in it is an open question in every case as to whether we shall be able to prevent suppuration. An incision is indicated wherever there is engorgement, even though no pus has yet been formed. The latter rarely comes before the fourth day. If it is not found, no especial discomfort, then or thereafter, results to the patient from the incision, particularly if a little cocaine is used. 3. If pus is present, free incision toward the median line is indicated, to be followed by a hot bicarbonate of soda gargle, together with poultices on the outside. 4. Care should be taken to thoroughly open the bowels with a mercurial and a saline at the commencement of the treatment in every case.—*Journal of the American Medical Association*, 1892, vol. xix., No. 24, p. 685.

THE PEROXIDE OF HYDROGEN IN DIPHTHERIA.

DR. BENJAMIN WARD RICHARDSON adds a note as to the use of a thirty-volume solution in the local treatment of diphtheria: that it should never be used except upon open surfaces. The oxidation is so rapid in the presence of pus and similar disturbing substances that the effect is practically explosive in character. For the destruction of pus, weaker solutions (ten volumes) will answer well enough.—*The Medical Press*, 1892, No. 2792, p. 474.

THE ICEBAG AS A THERAPEUTIC AGENT.

DR. D. B. LEES believes that it will soon be recognized that many visceral inflammations ought to be treated, not with warmth, but with the local application of cold, precautions being, of course, taken to prevent any undue chilling of the body generally. In an account of eighteen cases of lobar and broncho-pneumonia, previously reported, he noted that the improvement caused by the icebag was not simply a reduction of temperature (though that often occurred to the extent of three or four degrees), but there was also a remarkable diminution of the physical signs over the diseased area, and an amelioration of symptoms. He believes that it is capable of saving some lives which would be lost if fomentations or poultices were employed; that it reduces the severity of the symptoms, relieves pain, gives comfort to the patient, and brings about an earlier and a more rapid convalescence. In pleurisy and pericarditis the effects are quite as apparent. Clinical observations of its use in other inflammatory conditions are cited, and the paper closes with the caution of care and watchfulness on the part of the physician and nurse, when no risk may be apprehended.—*The Clinical Journal*, 1892, No. 1, p. 4.

THE TREATMENT OF SEVERE HEPATIC COLIC BY COLD FULL BATHS.

DR. HUMBERT MOLLIÈRE reports two successful cases which received respectively twenty-one, and one hundred and one baths, the time being from ten to fifteen minutes, and the temperature 71° F. to 82° F. He advises, in addition, injections of cold water, one quart for each injection, not more than two quarts being used, and the number limited to six, in accordance with the plan described by Krull.—*Lyon Médical*, 1892, No. 48, p. 433.

THE TREATMENT OF CIRRHOSIS OF THE LIVER.

DR. DUJARDIN-BEAUMETZ has used hippuric acid in daily doses of from fifteen to twenty grains neutralized with milk of lime, practically, then, a hippurate of lime in lemon syrup, to relieve hepatic congestion. Although calomel has been recommended for its action upon the liver, and for its purgative and diuretic properties, yet he has not used it because of the possibility of salivation, and the uncertainty of its curative effects. Copaiva, not the balsam, but the resin, which is better borne by the stomach, in the amount of one drachm per day, has been strongly recommended as a diuretic. With diuretics can be combined purgatives, but with great caution, for they may cause hemorrhage and weaken the patient. Following Lancereaux, he recommends potassium iodide, especially in syphilitic and alcoholic cirrhosis, to the daily amount of from thirty to sixty grains, administered in beer or *café noir* at the meals. A milk diet added to this treatment will favor diuresis or, under the recommendation of Semmola, the daily dose of the iodide may be dissolved in a quart of water. In some cases a cure may be hoped for, but this depends more upon the condition of the liver than the treatment employed. In the atrophic forms failure will result.—*L'Union Médicale*, 1892, No. 133, p. 685, and No. 134, p. 697.

THE TREATMENT OF ASCITES BY CREAM OF TARTAR AND TONICS.

DR. M. SASAKI has made use of cream of tartar in large doses (two to eight drachms daily) with the addition of strengthening remedies, in the treatment of ascites resulting from cirrhosis of the liver and hepatic syphilis. He reports twelve cases where this plan of treatment has been carried out, the tonics employed having been some form of iron, quinine, cod-liver oil, or red wine. Continuance of the remedy for several months may be necessary.—*Berliner klinische Wochenschrift*, 1892, No. 47, S. 1184.

DIGITALIS IN AORTIC DISEASE.

DR. W. H. BROADHEAD, in the discussion upon the cardiac tonics at the annual meeting of the British Medical Association for 1892, points out that in aortic regurgitation failure of compensation is manifested either by defective propulsion of blood into the arterial system, or by obstruction on return, working through the lungs and right heart. When the symptoms are of the first class the effects of the administration of digitalis are uncertain; in some there is reason to believe that it has precipitated a sudden, fatal termination. In the second class of cases we may expect the same benefit as in mitral regurgitation. In aortic stenosis the same argument holds, and the cases in which digitalis is to be used should be selected as in the instance of regurgitation. Here it is even less competent to overcome the direct effects of obstruction than of regurgitation, and the left ventricle may be injured if stimulated to drive its contents through a narrowed orifice. More relief is often obtained by relaxing the arterioles by means of nitroglycerin, deducting, thus, the arterio-capillary resistance from the total work with which the heart has to contend.—*British Medical Journal*, 1892, No. 1665, p. 1154.

THE TREATMENT OF SYPHILIS BY DOG'S SERUM.

MR. EDWARD COTHERELL, reports that his experiments in two cases have shown good results. The *rationale* appears to be the marked bactericidal action of freshly prepared serum, and it is essential that the serum should be used when perfectly fresh, otherwise the results will be disappointing. The amount used is about half a drachm, injected into the back, twice weekly, under antiseptic precautions. The mode of preparation is to take blood aseptically from the carotid artery into a large sterilized test-tube which has a little oxalate solution to prevent coagulation. When about three parts filled the tube is plugged with cotton, and the tubes put in a centrifugal machine by which the corpuscles and plasma are separated. The plasma is then decanted off and allowed to clot, from which the serum separates, and can be drawn off into small sterilized test-tubes which are plugged with cotton. Afterward, a necropsy is performed upon the dog, and the serum only retained if the animal is found to be perfectly healthy.—*The Medical Press*, 1892, No. 2792, p. 475.

The following papers are worthy of notice :

"The Treatment of Myxœdema by Injections of the Liquid Extract of the Thyroid," by M. BROWN-SÉQUARD, in *Archives de Physiologie*, 1892, No. 4, p. 752. A brief statement of the work done by various experimenters, recommending, as important, the use of porcelain or aluminium filters in the preparation of the extract.

"The Coagulation of Sulphate of Quinine," by M. E. DUCLAUX, in *Ann. de l'Institut Pasteur*, 1892, No. 10, p. 657. An interesting pharmaceutical study.

"The Antitoxic Action of the Blood-serum of Patients Recovered from Cholera," by DR. A. LAZARUS, in *Berliner klinische Wochenschrift*, 1892, No. 43, S. 1071. Its protective influence established for guinea-pigs.

"The Action of Abdominal Massage in Habitual Constipation," by DR. ANTON BUM, in *Wiener medizinische Presse*, 1892, No. 46, S. 1817. Massage of the abdomen fulfils the causal indication of strengthening the abdominal muscles and those of the large intestine.

"The Action of Salophen, and the Elimination in Crystalline Form of This and Related Remedies through the Skin," by DR. RICHARD HITCHMANN, in *Wiener klinische Wochenschrift*, 1892, No. 49, S. 702. A very valuable contribution, and throwing much light upon the behavior of this remedy in the organism.

"The Subcutaneous Injections of Phosphate of Soda in Diseases of the Nervous System," by DR. CROCQ, JR., in *Gazette hebdomadaire de Médecine et de Chirurgie*, 1892, No. 42, p. 499.

"The Value of Hypodermatic Injections of Guaiacol and Iodoform in the Cure of Pulmonary Tuberculosis," by DOTT. DAVIDE TURIA, in *Gazetta degli Ospitali*, 1892, No. 118, p. 1098.

"Malarial Cachexia and its Treatment," by DR. JOSEPH SHARP, in *The American Therapist*, 1892, No. 4, p. 69.

"The Hæmato-therapy of Tetanus," by DOTT. GIUSEPPINA CATANI, in *Gazetta degli Ospitali*, 1892, No. 120, p. 1118.

MEDICINE.

UNDER THE CHARGE OF

W. PASTEUR, M.D. LOND., F.R.C.P.,

ASSISTANT PHYSICIAN TO THE MIDDLESEX HOSPITAL; PHYSICIAN TO THE NORTHEASTERN
HOSPITAL FOR CHILDREN;

AND

SOLOMON SOLIS-COHEN, A.M., M.D.,

PROFESSOR OF CLINICAL MEDICINE AND APPLIED THERAPEUTICS IN THE PHILADELPHIA
POLYCLINIC; PHYSICIAN TO THE PHILADELPHIA HOSPITAL.

SUBACUTE PULMONARY ŒDEMA OCCURRING ABOVE A DIMINISHING
PLEURAL EFFUSION.

DR. JAMES CALVERT (London) communicated the following case at a recent meeting of the Clinical Society of London:

A man, aged forty-five years, was admitted into hospital on September 22, 1891, with pleural effusion. On September 23d the whole of the left side was dull with fluid; it was aspirated, and forty-five ounces of clear yellow serous fluid drawn off, followed by partial expansion of lung above the fourth rib. The position of the heart beneath the sternum was not altered by the aspiration; it was evidently held by adhesions. Two weeks after the operation the lung above the fourth rib became œdematous, with abundant subcrepitant râles, and profuse expectoration of gray, frothy, watery fluid. During these two weeks the effusion had diminished, which was evidenced by the sinking in of the intercostal spaces, by the resonance of the sound side extending to the left of the sternum, and by the breath sounds becoming audible at the base behind; the upper limit of fluid could not be percussed out with accuracy because of pleural thickening and adhesions. The œdema persisted for three weeks and then began to decline gradually, so that when the patient left the hospital in January only an occasional crepitation could be heard. He attended as an out-patient for six months, and during this time he had no cough, no expectoration, no crepitations, and he gained weight and strength. The temperature after the aspiration was normal throughout. This subacute œdema, evidently different to the acute œdema occurring immediately after aspiration, was not due to an increasing effusion compressing the lung, or to a rupture of the effusion into the lung, or to new growth obstructing the venous return, but was probably due to obstructed venous return in a lung held by adhesions and endeavoring irregularly to expand in presence of a diminishing effusion. Practical point: These crepitations, limited to one apex and persisting for weeks, were not due to phthisis.

THE IRREGULAR HEART.

At a recent meeting of the Medical Society of London, DR. A. E. SANSOM read a paper on the above subject based on an observation of 47 cases pre-

senting pronounced cardiac irregularity for long periods, all of them being independent of structural disease of the heart. They were considered in two groups, the smaller being made up of ten cases of Graves's disease. The associations of cardiac irregularity in the larger group were: 1, Dyspepsia; 2, syphilis; 3, osteo-arthritis; 4, disturbances of the sense of hearing and naso-pharyngeal affections (illustrative cases were given under this head which tended to show that a reflex from the naso-pharyngeal tract and from the neighborhood of the auditory mechanism was often a potent cause of cardiac irregularity; 5, influenza (instances were given of special forms of arrhythmia due to the disturbance of the nervous mechanism by this cause); 6, mental disturbances and the effects of severe nervous shock; 7, cases without notable associations (these were parallel with those cases of rapid heart which showed no notable morbid alliances).

The author submitted that all forms and degrees of irregularity, from the slight to the most pronounced, were to be ascribed to disturbances of the nervous mechanism of the heart.

The cases without notable associations might point the lesson that whilst the central disturbance from which the other affections of Graves's disease were offshoots brought about in the majority abnormal rapidity of the heart's contractions, in the minority it induced irregularity. So in many instances arrhythmia cordis might be considered a *forme fruste* of Graves's disease, only it was better to express it that the *ensemble* of the phenomena of Graves's disease was due to the extension from the area of disturbance, which was focally that portion of the nervous system which was concerned with the regulation of the heart's movements. In all such cases, whether manifesting tachycardia or arrhythmia, outbreaks of dyspnœa or of gastro-intestinal disturbance—vagus storms, as he had termed them—were frequently observed. It seemed probable that whilst sudden overstrain was more likely to produce a tendency to morbid acceleration, the more chronic forms of mental depression tended to be associated with irregularity.

PTOMAINÉ POISONING.

DR. THOMAS STEVENSON (Official Analyst, Home Office) communicates the sequel to the case of a military officer, aged twenty-one years, who died in twenty-four hours with symptoms of acute poisoning after partaking at breakfast of six hot sardines on toast, with coffee.

At the post-mortem, made next day in cool, damp weather, lividity and rigidity were both well marked. The features were so bloated as to be unrecognizable. The whole body was emphysematous but the hands and feet, which appeared blanched by contrast. The mucous membrane of the stomach and the rugæ of the intestine were emphysematous. The liver was hyperæmic and friable posteriorly.

Four days later the opened tin of sardines, stomach contents, and some vomit were received for analysis.

"The sardines had no unusual appearance, and looked quite fresh; the tin itself was bright and uncorroded. Their odor was peculiar, but not offensive. Some of the fish were intensely toxic; of six white mice, which were fed on them, four died; also a rat; whilst two of the mice and a young cat, fed on

two of the fish, were unaffected. Two mice appeared to have immunity, for, when fed on portions of fish which had been fatal to other mice, they did not suffer. From four of the fish, weighing two and a quarter ounces, I extracted, by a modification of Stas's process, an alkaloidal substance, which weighed only one milligramme ($\frac{1}{85}$ grain). About two-thirds of this, when injected beneath the skin of the back of a young white cat, caused its death within four and a quarter hours.

"No characteristic pathogenic forms of bacteria were discovered in the sardines. A piece of one of the sardines which when eaten had caused the death of two mice, was macerated, whilst swarming with ordinary bacteria, in sterilized (by heat) water and placed beneath incisions in the backs of two guinea-pigs, but the animals were unaffected.

"These experiments point to poisoning by a toxic ptomaine, and not to the direct action of pathogenic bacteria on the animal organism."

An alkaloidal extract obtained from the stomach contents and another from the vomit proved rapidly fatal to animals. The symptoms exhibited by all the animals were similar—great feebleness, loss of muscular power, and retching.

"These experiments again appear to show that the stomach and ejecta of the deceased man contained a virulently poisonous ptomaine, similar in character to that contained in the sardines.

"A fragment of the putrid liver, swarming with bacterial life, but in which no characteristic pathogenic forms could be detected, was macerated in water previously sterilized by heat, and some of the macerated fluid was inoculated beneath the skin of the flanks of three guinea-pigs. All died within twenty-four hours. Two of the animals exhibited no particular post-mortem appearances. The third had much œdema about the site of inoculation, there was fluid in the peritoneal cavity, the spleen was enlarged and much congested, and the intestines were emphysematous. The œdematous fluid from the site of inoculation, the peritoneal fluid, and the spleen juice all abounded in bacilli similar in appearance to those of malignant œdema. Some were single rods, but many were prolonged into long jointed threads. No spores were seen.

"That a ptomaine and not the direct action of bacteria was the cause of the death of W. H. seems to me clear from the above experiments. Nevertheless, the facts that there was œdema of the thigh of the deceased man, and that his liver was capable of producing malignant œdema in a guinea-pig, are curious. I incline to the opinion that the ptomaine was generated before the tinning of the sardines."—*British Med. Journal*, 1892, No. 1668.

AFFECTIONS OF THE TESTICLE IN HEREDITARY SYPHILIS.

DR. GEORGE CARPENTER contributes a thoughtful paper on this subject to the *Practitioner*, 1892, No. 291. The bibliography is reviewed and eighteen cases are described. The author arrives at the following conclusions:

1. The testicles may be affected so slightly that it needs the microscope to detect the malady.

2. In a certain small percentage of cases of congenital syphilis the lesions of the testicles are such that they can be detected by physical examination.

These lesions may be present at birth, arise soon after, or appear only some months or years later. The general rule seems to be from birth up to two or three years, not often much after, and very rarely indeed at puberty.

3. The globe is, more often than not, alone affected, but not infrequently the globe and epididymis suffer together, and quite exceptionally the epididymis is attacked singly. It appears that the cord may suffer. The vas, vesiculæ seminales, and prostate are not attacked; at least so far there has been no record of such a complication.

4. The disease is very frequently, but not invariably, bilateral in its distribution, though one side may be more advanced in pathological changes than the other.

5. Hydrocele of the tunica vaginalis is not such an infrequent accompaniment of the malady as some writers would have us believe, and it may be, in young infants, the earliest indication that there is something wrong with the testicles. In all probability, as time goes on, the fluid is reabsorbed, and then the condition of the gland itself becomes more marked.

6. There is just a possibility that hydrocele of the cord may, in some instances, owe its origin to congenital syphilis.

7. The swelling of the testicle is a painless one; it feels like scirrhus; it may, or may not, be nodular, the latter for the most part, and a fungus testis is sometimes seen.

8. The enlargement of the affected organ is usually not great, and, in fact, there may be none at all, it being a very rare occurrence indeed to find in infants and children a testicle the size of an egg.

9. In the large majority of instances the microscopical appearance is that of the simple inflammatory form, passing on to the development of fibrous tissue with consequent destruction of the gland.

ERYSIPELAS OF THE BLADDER.

FRITSCH (*Internationale klin. Rundschau*, 1892, No. 44, p. 1785) has reported the case of a man, fifty-two years old, who, twenty years previously, had had gonorrhœa, followed by acute prostatitis, with suppuration and rupture into the bladder, and thereafter recurrent attacks of prostatitis. In the intervals between the attacks the patient was in fairly good health. On one occasion he was suddenly seized with a rigor and vomiting and elevation of temperature, followed, a day later, by a sense of pressure in the perineum, increased frequency of micturition and vesical burning. In a short time the subjective symptoms subsided, although the urine was turbid and deposited a sediment of pus; but after two days a second chill occurred, with a repetition of the previous symptoms. An intermission again took place, followed after a few days by elevation of temperature, vomiting, and chilliness; the tongue became heavily coated; the prostate gland was rapidly enlarged and tender; the bladder was irritable, and micturition was burning. On the following day the patient became soporous; headache was marked; there was pain in the splenic region; there was cough, with fine moist râles. The urine was acid, with a specific gravity of 1023, and contained albumin, as well as pus-corpuscles, pavement epithelial cells, and streptococci. A day or two days later an area of redness appeared on the anterior surface of the left leg;

a smaller area appeared over the tubercle of the tibia. These areas increased in size and soon coalesced. On cystoscopic examination the mucous membrane of the bladder was found to be intensely reddened, in places cyanotic, and raised in folds. The redness of the skin extended, and successively involved the right lower extremity, the buttocks, the back, then the anterior aspect of the trunk, the face, and the head. Examination of the urine and of some secretion that could be expressed from the urethra disclosed the presence of streptococci; cultures of these fluids developed the same organism, which, injected subcutaneously into lower animals, gave rise to the manifestations of erysipelas, while injection into the bladder was followed by the development of purulent cystitis.

BACILLUS AEROGENES CAPSULATUS, NOV. SPEC.

WELCH and NUTTALL (*Bulletin of the Johns Hopkins Hospital*, vol. iii., No. 24, p. 81) have reported the case of a mulatto, thirty-eight years old, with a history of syphilis and of alcoholic excess, who presented the symptoms of aneurism of the ascending aorta. The sternum became eroded and the summit of the swelling that had formed ulcerated in two places, repeated hemorrhages occurring, the patient, however, dying suddenly without further loss of blood.

The autopsy was held eight hours after death, the weather being cool. The body was still warm and presented no discoloration of the skin of the abdomen or other sign of decomposition. The subcutaneous veins over the abdomen and thorax, especially on the right side, were distended and tortuous and contained gas-bubbles. Emphysematous crackling was detected in the course of the superficial veins over the greater part of the body and extremities, as well as upon the lower portion of the neck up to the level of the thyroid cartilage, extending on the right side posteriorly to the vertebræ, on the left most evident anteriorly and laterally, in both axillæ, on the inner side of the arms, over the pectoral muscles, over the buttocks, in the groins, and the inner side of the thighs. Before the usual incisions were made into the abdomen and thorax a number of veins and arteries, including the jugular, femoral, and brachial veins, some superficial veins of the abdominal wall, the femoral and temporal arteries, were carefully exposed by suitable incisions through the skin covering them, and the presence of gas-bubbles determined without opening the vessels. The presence of gas in the subcutaneous connective tissue was also determined by incision. The gas burned with a pale-bluish, almost colorless flame, a slight explosive sound being heard at the moment of ignition.

The peritoneal cavity was dry and not distended with gas. The visceral and parietal peritoneum, including the omentum, was studded with small, gray, translucent tubercles. The pleural cavities were obliterated by adhesions. The pericardial sac contained 30 cc. of thin, blood-stained serum containing gas-bubbles. The cardiac veins and arteries contained gas-bubbles. The various cavities of the heart contained soft, dark-red coagula and thin, lac-colored blood, with which were mingled gas-bubbles in large number. The pulmonary artery and veins contained gas-bubbles. The muscular wall of the heart was soft and flabby, and on section presented a peculiar, spotted

appearance. There were numerous small cavities throughout the myocardium containing gas. Immediately around these cavities the muscular tissue was pale-whitish in appearance. The endocardium was diffusely blood-stained. The ascending arch of the aorta was much dilated; its wall was thickened, its inner surface diffusely blood-stained and presenting many firm, partly-calcified and atheromatous patches. Nearly two inches above the aortic valves was a sacculated aneurism, filled with coagula and presenting two ulcerated openings on its superficial aspect.

The lungs were hyperæmic, œdematous, pigmented; the upper lobes contained old cavities with fibrous and caseous contents, dense interlacing fibrous tissue, a few caseous nodules, and many small, firm, gray, miliary tubules, without fresh pneumonia. The surface of the spleen was studded with miliary tubercles; the parenchyma presented a few grayish tubercles; it was soft, brownish-red; on pressure a large number of gas-bubbles escaped. A few small, grayish-yellow tubercles were visible on the surface of the kidneys and on section. Gas-bubbles escaped from the bloodvessels on section and on pressure. The vessels in the pelvis were diffusely red from imbibition. The lower third of the ileum contained scattered fresh tuberculous ulcers. The mesenteric glands were pale and swollen, and contained a few tubercles. The liver presented emphysematous crackling on pressure. Its surface and cut section presented a peculiar, mottled appearance, from the presence of many little, round, gas-containing cavities. Gas-bubbles were present in large numbers in the vessels of the liver.

The aorta was atheromatous throughout. The large and small arteries likewise presented scattered patches of atheroma. The intima of all the large arteries and veins was diffusely red, from imbibition of blood-coloring matter. The blood was thin, watery, transparent, and lac-colored, and everywhere contained gas-bubbles. It presented no distinct odor, and the body no putrefactive odor or greenish discoloration. The blood, taken with care from the interior of veins and arteries immediately after opening them, showed fewer and paler red blood-corpuscles than normal. Many of the red cells were irregular in shape and there were shadows of corpuscles. The colorless corpuscles were swollen and their granules often in molecular movement. The blood from the heart was rich in bacilli, from about 3 to 5 μ long, about as thick as anthrax-bacilli, with slightly rounded extremities, sometimes almost square-cut, occurring chiefly in pairs and in irregular masses, and not in long chains. The same kind of bacilli were present in large number in cover-slip preparations from the laminated clot of the aneurism, the liver, the spleen, and the kidney. In all situations the bacilli appeared in pure culture. They were not motile. They stained readily with the usual aniline dyes, but often presented small unstained spots. They possessed a capsule, evident in the stained specimens. Bacilli were found in sections of liver, myocardium, and kidney. They were most abundantly present in the large arteries and veins. The pericardial lymphatics were injected with masses of bacilli. On cultivation the organism proved to be anaërobic and gas-producing. It has not proven pathogenic to healthy rabbits under ordinary conditions. The conclusion is reached that the organisms in question gained entrance by the opening in the aneurism, finding lodgment in the laminated clot and giving rise to the formation of gas, the circulation of which brought about sudden death.

SURGERY.

 UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE
UNIVERSITY AND GERMAN HOSPITALS;

ASSISTED BY

ALFRED C. WOOD, M.D., AND C. L. LEONARD, M.D.,

INSTRUCTOR IN CLINICAL SURGERY, UNIVERSITY ASSISTANT INSTRUCTOR IN CLINICAL SUR-
OF PENNSYLVANIA; ASSISTANT SURGEON, GERY IN THE UNIVERSITY OF
UNIVERSITY HOSPITAL. PENNSYLVANIA.

 THE REMOVAL OF CEREBRAL TUMORS.

BRAMANN (*La Sem. Méd.*, 12e année, No. 31) reports the following interesting cases of brain surgery:

Case I. Male, aged forty-six years; had paralysis of the left hand and of the muscles of the face on the same side, and finally involvement of entire upper and lower extremities on the left side and the rotation of the head away from that side. These symptoms, with the absence of fever or traumatic history, led to the diagnosis of a cerebral tumor in the region of the right Rolandic fissure. The operation showed a cyst containing thirty-five grammes of yellowish fluid; after its removal there was decided amelioration of symptoms. Three weeks after, convulsive attacks indicated further operation, when an ill-defined tumor was removed through the same opening; the symptoms were for a time relieved, but a third operation became necessary, and a neoplasm weighing ninety grammes was removed. After this there was complete relief and recovery, with no return of symptoms.

Case II. Male, aged twenty-nine years; had headache, paralysis of left arm, difficulty in phonation and deglutition, finally diplopia with diminished acuteness of vision, but without vomiting. A large opening was made in the fronto-parietal region on the right side, and a tumor the size of an apple was removed; the wound was tamponed on account of profuse hemorrhage; there was collapse, with loss of consciousness for three days. On the fifth day, when the tampon was removed, the wound was cicatrized and the osteo-cutaneous flap was firmly adherent. Paralysis of the left arm remained, but no other symptom.

 RESECTION OF THE CÆCUM FOR TUBERCULOSIS.

AN interesting case of successful removal of the entire cæcum and a portion of the ileum is reported by SACHS (*Arch. für klin. Chir.*, Band cxl., Heft 2). The patient was forty-one years of age and had no signs of tubercular disease, and not until a microscopical examination of the tumor had been made could the pathological condition be diagnosticated. There was considerable thickening of the walls of the cæcum, causing stenosis, but no great increase in the bulk of the intestine. After opening the abdominal cavity

over the tumor, it was brought out of the wound, the intestine on either side cut between long-jawed artery forceps, and the mesentery ligated and cut away. The ileum was united to the ascending colon by Lembert-Czerny sutures, and a second layer of interrupted sutures was placed in the serous surfaces. The colon and intestine were united, as is customary in the case of the stomach in resections of the pylorus. The abdominal wound was closed without drainage, the wound being covered by a collodion film; primary union was obtained. The case progressed without fever until the third day, when slight fever was noted; and a hydro-nephrosis which had been present before the operation, but relieved by it, was found to have returned. This the author supposes was due to the obstruction of the ureter by products arising from an inflammation in the pelvis of the kidney, the cause of which being unknown—for although pus was found in the urine, there was no cystitis present and no trace of tubercle bacilli could be found in the urinary sediment. The hydro-nephrosis disappeared and the patient made a good recovery, leaving the hospital thirteen days after operation, in good condition, though the emaciation still persisted. The author is a strong advocate of the Lembert-Czerny suture in these operations, believing it applicable in more cases than either the bone plates of Senn or the submucous resections of Kummer, although these have their advantages and are more useful in certain cases.

HYPERTROPHY OF THE MAMMÆ.

SCHÜSSLER (*Arch. für klin. Chir.*, Band cxi., Heft 2) reports two cases of hypertrophy of the mammæ; in one case the breasts were removed. He believes that many cases have been falsely reported as hypertrophy, which were in reality only other forms of tumors occurring in the breasts. The term hypertrophy, and the only one to which he thinks this name should be applied, is that in which only the normal histological elements are present, and in which the increase in size is solely due to their exuberant growth. And these were the microscopical conditions he found present in the cases operated upon.

The clinical history was as follows: These enlargements make their appearance at the time of the first menstruation, and more seldom at the first pregnancy. They appear usually in one breast, followed in six months' time by the appearance in the other. The first symptom, so far as noted, is the hardening of the breasts, these becoming fixed to the chest, and non-pendulous. The skin is unaltered, except stretched by their increased size. The mamillæ are unaltered. Secretions of cholesterin and milk are only observed when coincident with pregnancy. The prognosis is not unfavorable, but early amputation is desirable, as abscess and gangrene may complicate the disease, though patients have died from intercurrent disease after carrying these tumors eighteen years.

A. REVIEW OF 1793 CASES OF ANÆSTHESIA.

WACHHOLTZ (*Arch. für klin. Chir.*, Band cxi., Heft 2) draws the following conclusions from 1793 cases of anæsthesia, of which 1684 were by chloroform, 45 by mixed narcosis of chloroform and ether, 43 by chloroform and

cocaine, 20 by chloroform, ether, and cocaine, and 1 by chloroform and morphine. The average amount of chloroform required for complete anæsthesia, as shown by loss of conjunctival reflex, was 10.6 grammes, and the average time required 9.1 minutes, and an average amount of 17.6 grammes was required for the average duration of narcosis—34.3 minutes. Disease, especially sarcoma, of the larynx, was the most obstinate in yielding to the first stage, and required the most chloroform before the anæsthesia was complete. With hard drinkers the well-known obstinacy and excitability were observed before yielding to the anæsthetic. It was also remarked that each succeeding narcosis in the same individual required more time and more chloroform to produce complete anæsthesia. Anæmic patients required more than the plethoric. The nature of the disease affected the amount required, the malignant growths requiring considerably more. Ether was used in all cases where heart complications were found, or the patient was anæmic or cachectic; but was used in mixed narcosis, chloroform being used to produce the primary stage. Cocaine was used in subcutaneous injections, after the first stage had been passed in the chloroform narcosis, and the results showed that less chloroform was required during the remainder of the operation than in simple chloroform anæsthesia, and it seemingly prevented post-operative vomiting. Of these 1793 cases, 1065 were males, 728 females, but sex had little or nothing to do with either the length of time or amount of the anæsthetic required. Asphyxia most frequently occurred through irritation in the first stage of anæsthesia, falling back of the tongue and the stoppage of the larynx by vomited matter being other causes.

Two cases of death occurred: one, a case of cancer of the rectum in the first stage, while a rectal speculum was being introduced; "the patient turned pale and stopped breathing." The second death occurred during the after-dressing, from a cause not fully understood. Fifteen per cent. of cases vomited; choking was noted in three per cent. One case died during the operation for a strangulated hernia, a regurgitated fecal mass lodging in the larynx. The greatest danger to a patient, the author believes, is in too concentrated chloroform vapor.

THE OPERATIVE TREATMENT OF GENU VALGUM.

REGNIER (*Arch. für klin. Chir.*, Band cxl., Heft 2) in discussing these operations, divides the cases into two classes: The first, in which the deformity is due to a curvature in the tibia; the second, in which the curvature is in the femur. For the first class he advises the division of the tibia by any of the subcutaneous methods, but in the division of the fibula recommends the following modifications, on anatomical grounds, with the view of avoiding the too frequent laming of the peroneal nerve either during the operation or by the bone-ends, or by exuberant growths of callus and the consequent atrophy of the group of muscles supplied by it. With the leg flexed upon the thigh, the head of the fibula should be found and a perpendicular incision, three-quarters of an inch in length, carried downward; this will just avoid the branching peroneal that lies immediately below. Then the bone should be divided in a plane from above downward and from without inward, to avoid the danger of compressing the nerve between the bone-ends. The leg

should be dressed in a plaster-of-Paris dressing for from eight to ten days, and then elastic bandages applied to bring it into correct position. The second class should be treated by Macewen's supra-condyloid division of the femur, and to the description of this method, with seventeen cases, he devotes the remainder of his article.

THE OPERATIVE TREATMENT OF OLD LUXATIONS OF THE ELBOW-JOINT.

SSOKOLOW (*St. Petersburger med. Woch.*, Jahr. xvii., No. 11), in speaking of the treatment of these cases says: It is better by forcible manipulation under anæsthetics, even with the rupturing or cutting of the triceps tendon, to secure an angle of motion of 20 to 25 degrees without operation, than to subject the patient to an operation which will deprive him of the use of his arm for four or five months, and he quotes Ollier as saying that "the section of all structures holding the joint in an abnormal position and the return of the articular surfaces to their normal position is far preferable, when possible, to a resection." In operating, he believes there should be no fixed line of incision, but that such incisions should be made as will give perfect access to the joint. He objects to the Langenbeck incision, because of the difficulty experienced in closing the wound when the joint is flexed. He himself prefers to open the joint posteriorly, chiselling away the attachment of the triceps tendon and replacing it after the "toilet" of the joint. In the four cases he reports there was no great difficulty in replacing the joints after the surrounding connective tissue and inflammatory growths had been removed, but it was necessary, on account of the displacement produced by the contracted muscles and tissues, in some cases to hold the articular surfaces in position by a temporary suture, which was easily removed afterward by scissors passed down the ends of the suture, which had been brought out through the wound. The difficulty in motion found after operation was removed by forced movements under an anæsthetic and by passive motion persistently carried on by the patient.

A CASE OF RECURRENT APPENDICITIS; OPERATION; RECOVERY.

MUNRO (*Boston Med. and Surg. Journ.*, vol. cxxvi., No. 26) reports a case of recurrent appendicitis in a patient seventeen years of age; the attacks lasted over a period of nearly two years. At the operation very little inflammation was found, the appendix appeared to be normal, but it was ligated and removed, the stump being sewn. The patient made a good recovery, and for one year has had unimpaired health. A microscopical examination of the appendix showed no pathological change.

THE PATHOLOGY OF CALLOUS TUMORS.

The following contribution to the literature on this subject is made by HABERERN (*Arch. für klin. Chir.*, Band cxi., Heft 2), in reporting a case of chondro-sarcoma occurring in the ensheathing callus of a fracture of the lower third of the humerus. The history showed that the tumor began to grow after the fracture, and the microscopical examination demonstrated its origin to have been in the chondroid substance of the ensheathing callus.

After a careful historical study of the cases and literature on this subject, from a pathological standpoint, he concludes that in his case the tumor originated in the unossified residues of callous substance remaining in the ensheathing callus, and owing their origin or absence of ossification to the deficient vascularization of the ensheathing cartilage. These remaining unossified portions of the cartilage he believes formed the matrix for an exuberant growth of cartilage, and that the enchondroma was the result of this growth and that its degeneration produced the chondro-sarcoma.

THE DIAGNOSIS OF TUBERCULAR CYSTITIS.

DUPLAY (*La Sem. Méd.*, 1892, No. 26), in discussing this disease, says that, of varieties in which there is tubercular involvement of other organs, genital or pulmonary, the diagnosis is not difficult; but in cases where no such lesions exist the diagnosis should be made by the frequent bloody micturition appearing at any time, and not after exercise and jarring, as in stone. This is the symptom of the first stage. Pain radiating through the genito-urinary organs is the symptom of the second; it is intense both at the beginning and end of micturition, but may be absent altogether between these times. In the third stage the hæmaturia disappears, but the urine becomes muco-purulent and turbid. Manual examination may elicit tenderness at the base of the bladder, and pressure a dull pain in the glans penis. Microscopical examination confirms the diagnosis only. The prognosis is unfavorable, death usually ensuing from an ascending pyelo-nephritis. General tubercular therapy is the only one he believes in, unless severe pain justifies supra-pubic cystotomy, curetting, and cauterizing by the thermo-cautery; this may destroy the vesical trouble and alleviate the pain.

SUB-PUBIC LUXATION OF LEFT FEMUR; RESECTION; RECOVERY.

VILLENEUVE (*Rev. d'Orthop.*, 1892, No. 3) reports a case of luxation of the head of the femur under the pubic arch, seen fifty-two days after the accident, that was found to be irreducible, even under anæsthetics. Operation was decided upon, but after considerable effort it was found to be impossible to reduce the dislocation without endangering the life of the patient by a protracted operation, and as the condition of the acetabulum was unknown it was decided to perform an osteotomy. The great trochanter was divided at its lower third which allowed the limb to be easily reduced to its normal position. The patient made a speedy recovery, with only one and a half inches of shortening, and a perfectly useful limb. The author believes that the results obtained are worthy of notice and are far preferable to a tedious operation, especially where the condition of the acetabulum is hypothetical.

OCCASIONAL DECEPTIVE NATURE OF THE SYMPTOMS OF STRANGULATED HERNIA.

MR. BENNETT (*Lancet*, No. 3564) illustrates admirably this subject by the following three cases:

Case I. Strangulated omental hernia, in which there was no interference

with the action of the bowels; herniotomy; commencing gangrene of contents of sac; radical cure; recovery.

Case II. Painful tumor over the saphenous opening; diarrhœa; exploratory operation; strangulated hernia of vermiform appendix, which was gangrenous; removal of the appendix; recovery.

He draws particular attention to the fact that in both of these cases, although there was sufficient strangulation to produce gangrene, yet constipation and vomiting were absent, and in one case diarrhœa was present. There were present in both cases recent increase in size and tension of a painful tumor, yet in each case only a single symptom was conclusive. In Case I. the entire absence of hernial impulse, which he very rightly defines as *expansile* in non-strangulated herniæ, and not simple mobility of the hernia upon coughing; mobility may be present where strangulation exists, as in the first case, but *expansile* "impulse on coughing" cannot be. And he holds that every case in which any change has taken place in the tumor, such as increase in size or tension, whilst *expansile* impulse is absent, should be regarded as strangulated. In Case II. the sole diagnostic symptom was the existence of putrefactive crackling in the tumor, which could only be present with a gangrenous condition.

Case III. Symptoms of strangulated femoral hernia, with acute intestinal obstruction, caused by glandular abscess in the crural canal; operation; immediate and complete relief.

This patient had always been in good health until six months before operation, when she noticed a "lump" in the right groin that varied in size, never entirely disappearing, sometimes swelling and being painful after a hard day's work. Three days before admission the swelling, without any known cause, became rapidly larger; pain, tenderness, and constipation followed, and almost immediately vomiting, recurring frequently and copious and semi-stercoraceous in character; the pain was apparently characteristic, extending over the lower part of the abdomen and constantly dragging upon the umbilicus; nevertheless, the operation showed it to be an abscess, with a distinct caput filling the crural canal, while the septum crurale was found intact, proving that no hernia had ever existed.

Complete relief followed the operation, showing that the symptoms were dependent upon the abscess and only to be accounted for by referring them to reflex nervous irritation. And yet the awkward fact remains that symptoms identical with those taught to be characteristic of a certain condition were present, while the condition was not.

EXTERNAL ŒSOPHAGOTOMY.

MEYER (*N. Y. Med. Journ.*, November 19, 1892) reports an unsuccessful case of œsophagotomy, combining both the external and internal operation, death ensuing from septic emboli. He believes that these operations can be performed under antiseptic conditions. He would perform first a gastro-enterostomy and an external œsophagotomy; clean the œsophagus by an antiseptic solution; tampon the cardiac orifice to prevent infection by regurgitation; and by placing a tampon in the superior portion, prevent infection from the mouth. Through the external œsophagotomy wound the internal

operation could then be performed in a similar manner to internal urethrotomy. The cutting should be retrograde, if possible, the instrument being first passed through the stricture from above. Bougies should be passed by the wound in the neck frequently and the patient fed by rectal alimentation, and directly into the stomach, until bougies can be passed by the mouth and the wounds allowed to heal. In all cases of ulceration of the œsophagus, sounds should be passed after the fourth or fifth week, and a continuance through life may be necessary. External œsophagotomy often makes it possible to pass a stricture that was impossible from the mouth, and a gastro-enterostomy will often allow the passage of a sound upward that could not pass the stricture in any other way; and by means of a continuous silk thread remaining constantly in the œsophagus, and passing out at the mouth and the wound in the stomach; gradual dilatation by means of bougies passed over it can be accomplished.

OTOLOGY.

UNDER THE CHARGE OF

CHARLES H. BURNETT, A.M., M.D.,

AURAL SURGEON, PRESBYTERIAN HOSPITAL, ETC., PHILADELPHIA.

REMARKABLE IMPROVEMENT IN HEARING BY REMOVAL OF THE STAPES.

DR. FREDERICK L. JACK, of Boston, presented an important paper with the above-named title, at the meeting of the American Otological Society, 1892.

Referring to the investigations and operations of Kessel, of Jena (1875); Schwartze, of Halle (1885); and of Sexton, of New York (1886), respecting removal of the membrana tympani, the malleus, and the incus for the relief of chronic otitis media suppurativa, and chronic catarrhal otitis media, and finally to the investigations of Botey, of Barcelona (1891), regarding the removal of the stapes in birds and in man, he proceeds to describe his own operations for the removal of the stapes for the relief of deafness in both chronic otitis media suppurativa and in chronic otitis media catarrhalis, undertaken with the aid of Dr. W. T. Bryant. Then follows a list of sixteen cases, three actively purulent, in which all the ossicles or their remnants, including the membrana tympani, were removed, and thirteen non-purulent or chronic catarrhal ones, in which only the stapes was removed. In one of these latter cases the incus fell from its situation after detachment from the stapes. There was very marked improvement in hearing in all. In one of the cases of chronic catarrhal otitis media the improvement in hearing following the removal of the stapes was so great as to induce the patient to return in three months and request the performance of the operation in the other ear, also deaf from chronic non-suppurative catarrh. The operation was

performed in the other ear, as requested, and here, too, marked improvement in hearing followed the operation.

Dr. Jack says: "Not only is the simple removal of the stapes much better in its results than the removal of the two large bonelets only, as shown by the operations already performed, but on the ground of conservative surgery, it is also much to be preferred. It produces greater improvement in the hearing, and, according to my experience up to the present, there has been no inflammatory reaction whatever, or any other bad results."

TWO CASES OF PYÆMIA FOLLOWING SUPPURATION OF THE MIDDLE EAR,
TREATED BY LIGATURE OF THE INTERNAL JUGULAR VEIN AND
CLEANING OUT THE LATERAL SINUS, WITH COMPLETE SUCCESS IN
ONE OF THE CASES.

MR. RUSHTON PARKER, of Liverpool, England, has performed the above-named operation in two cases, one a man twenty-five years old, and the other a boy seven years old. Both were subjects of chronic purulent otitis media. In the first case—that of the man—there was double optic neuritis, more on the right than the left side, the latter being the side of the diseased ear. There was no swelling or tenderness of the mastoid, but there were swelling and tenderness of the neck just below. Fever, vomiting, and rigors, in addition to the above-named symptoms, seemed to indicate that plugging of the jugular vein, following that of the lateral sinus, had occurred. On the eleventh day of the illness, the symptoms continuing unabated and the swelling and tenderness of the neck having increased, an incision seven or eight inches long was made down to the jugular vein, exposing also the mastoid region. The vein was found firmly plugged from the base of the skull to below the junction with the facial trunk, which also was plugged for an inch or so. Both veins were cut between two ligatures in their healthy parts, and their plugged portions detached from the bed. The mastoid region was laid bare, revealing the interior of the lateral sinus, occupied by green purulent lymph and the end of a purple blood-clot, thickening downward. The sinus was partly scraped, and upon probing upward it bled freely, but was quickly stopped with a plug of antiseptic wax. The lower half of the wound was stitched and healed by first intention. The upper half was plugged with cyanide gauze, after washing with a perchloride of mercury solution. Symptoms improved for two days, when the temperature rose again to over 103°. The patient was again chloroformed, and the wax plug removed from the lateral sinus. Fetid pus was found behind the plug. The symptoms improved once more, but upon ceasing frequent dressings the temperature rose again, even reaching 105° on two days. In two weeks after the second operation the patient left his bed and has remained well ever since; the mastoid opening was kept open for three months.

In the second case, that of a boy seven years old, the lateral sinus was exposed, but was found apparently healthy. The temperature fell from 106° to 100°. Fever returning, the jugular vein was tied and laid open. It was found to contain a thick lining of putrid lymph, enclosing liquid pus. All the parts exposed became sweet and healthy, but the lad died three days later of meningitis.

CHRONIC SUPPURATION OF THE MIDDLE EAR, COMPLICATED WITH
ABSCESS OF THE NECK; DEATH.

DR. E. OLIVER BELT, of Washington, D. C., has given an account of a case of chronic purulency of the ear following grippe, in a man fifty-three years old, who had been addicted to excessive drinking. Six weeks after the beginning of the otorrhœa there were tenderness and swelling about the mastoid region and in the neck below the auricle. These symptoms improved a little under antiseptics of the ear and iodine on the mastoid. However, in ten days the swelling in the neck increased, and was poulticed. The patient grew weak and dull; pulse 100, temperature A.M. 97°, P.M. 98°. Deep fluctuation now being felt under the sterno-cleido-mastoid muscle, it was decided to make an incision to liberate the pus. Operation was made without anæsthesia, excepting a few injections of cocaine over the mastoid and the abscess in the neck. Incision through the sterno-cleido-mastoid muscle and deep fascia gave vent to a large quantity of pus. The mastoid was opened, too, but no periostitis or pus in the cells was found. Pus seemed to enter the abscess cavity directly from under the auricle. A few hours later patient was found in semi-conscious state. The patient then sank gradually into a comatose state, and died quietly twelve hours after the operation without any evidence of meningitis, hemorrhage, thrombosis, or septicæmia. The cause of death was supposed to be exhaustion.—*Ophthalmic Record*, 1892.

TREATMENT OF "ATTIC" SUPPURATION BY EXCISION OF THE
MEMBRANA TYMPANI AND AUDITORY OSSICLES.

MR. MILLIGAN, of Manchester, England, has carried out the above-named treatment in suitable cases with excellent results. "In considering the advisability of removing diseased ossicles it must be borne in mind that anything which tends to keep up suppuration from the ear is a source of danger not only to the hearing but also to the life of the patient. Absorption of putrid pus may take place into the systemic circulation and set up general pyæmic symptoms, or the formation of localized abscesses in the cerebrum, the cerebellum, or the lungs. It becomes, I think, the duty of the surgeon to free the patient from this possible source of danger regardless, one might almost say, of the effect the operation may have upon the hearing power. . . . The results of the operation, however, show that the hearing power may improve in a remarkable way in many cases. In Ludewig's analysis of 32 cases, the hearing power was decidedly improved in 16, remained as before in 9, and was impaired in 3 cases; 4 cases did not undergo a reëxamination." In Mr. Milligan's four cases there was improvement in hearing in all; markedly so in one of them, the hearing becoming very nearly normal even after entire regeneration of the membrana had ensued.—*Lancet*, London, 1892.

CLINICAL OBSERVATIONS ON THE EFFECTS OF QUININE IN ACUTE
INFLAMMATIONS OF THE EAR.

DR. H. N. SPENCER, of St. Louis, Mo., in a paper with the above-named title, sets forth the gravity of administering quinine in cases where the ear

is already affected, and his experiments also show that some subjects are very sensitive, in their ears, to the ingestion of this drug: He says, "Many instances have come under my personal observation in which a suppurative attack has been much intensified by its (quinine) employment, and where a chronic inflammation has been induced by the exciting influence, which, under more favorable circumstances, might have been readily arrested." He further urges that great care, in fact more care, be exercised in the use of this drug in subjects affected with subacute and chronic inflammations of the ear. In conclusion, Dr. Spencer propounds "a question which is very pertinent," in view of the recent widespread epidemic of la grippe: "May not the frequent ear-complication in la grippe be due, at least in some measure, to the quinine treatment of this disease which is so much in vogue?"—*Medical Fortnightly*, 1892.

A NEW METHOD OF MAKING A DIFFERENTIAL DIAGNOSIS BETWEEN LABYRINTHINE AND MIDDLE-EAR DISEASE.

DR. LUDWIG JANKAN, of Zurich, presents in a preliminary communication the following means of determining whether the labyrinth or the middle ear is the seat of disease in some cases of deafness: In an observation of the phenomena in 104 cases of ear-disease, 68 of which were affected in the sound-conducting apparatus, and 36 in the sound-perceiving organ, he discovered that in the cases of disease of the conducting apparatus, sound was conducted to his ear by means of a form of stethoscope connected with the patient's ear more loudly through the more affected ear of the patient. He also found that in patients affected with disease of the sound-perceiving organ, sound was conducted to his ear more loudly from the less affected ear of the patient.—*Deutsche medicinische Wochenschrift*, 1892.

DERMATOLOGY.

UNDER THE CHARGE OF

LOUIS A. DUHRING, M.D.,

PROFESSOR OF DERMATOLOGY IN THE UNIVERSITY OF PENNSYLVANIA.

PITYRIASIS RUBRA PILARIS.

GALEWSKI, of Dresden (*Brit. Journ. of Derm.*, September, 1892), considers this disease, which has been the subject of so much discussion recently, and concludes that: 1. The lichen ruber of Robinson and Taylor is the same as pityriasis rubra pilaris of Devergie, Richaud, and Besnier, and this disease includes the benign forms of lichen ruber acuminatus (Kaposi). 2. Pityriasis rubra pilaris is an exfoliative hyper-keratosis, and must be carefully distinguished from lichen planus (Wilson). 3. The typical lichen ruber acuminatus (Hebra, Kaposi) is a disease *sui generis*. 4. That in any doubtful

case arsenic should be administered, and that the best local treatment is the application of salicylic acid ointment after prolonged baths, and chrysarobin ointment at intervals.

SOME DANGERS OF CONTAGION TO WHICH PHYSICIANS ARE EXPOSED.

PROF. J. C. WHITE (*Boston Med. and Surg. Journ.*, February, 1892) directs attention to the numerous sources of contagion with which the medical man is liable to meet, more particularly lice, fleas, bed-bugs, tinea favosa, tinea tonsurans, malignant pustule, glanders, diphtheria, gonorrhœa, erysipelas, and rarely actinomycosis. Of more interest is the danger arising from leprosy, tuberculosis in its varied forms, and syphilis. Proper washing of the hands and the disinfection of suspicious wounds should be taught and studiously practised by physicians and nurses.

TREATMENT OF ALOPECIA BY IODIZED COLLODION.

E. CHATELAIN, of Paris (*Brit. Journ. of Derm.*, July, 1892), gives thirty-four cases, arranged in three series, his paper consisting mainly of an account of the third series, on which alone he wishes to base his claims for the efficiency of the remedy. He is a firm believer in the microbic origin of the disease. The treatment consists in the periodic application of iodized collodion (0:31) to the patches, and of some antiseptic to the rest of the scalp as a prophylactic. The remedy provokes a sensation of burning, smarting, or itching, which soon passes off. The collodion pellicle separates spontaneously in a few days; if removed forcibly it epilates the patch. The average duration of treatment was fifty-four days, the application being made every four or five days.

PEDICULI PUBIS UPON THE SCALP.

I. HEISLER (*Archiv für Derm. u. Syph.*, 1892, Heft 4) describes a case occurring in Róna's clinic, Buda-Pesth, where this parasite was found upon the scalp, eyelashes, and eyebrows of a child with light hair, aged fourteen months. Scratching had been noted for two months before the cause was discovered.

DOES A VESICULAR FORM OF LICHEN RUBER EXIST?

MAGNUS MÖLLER, of Stockholm (*Nordiskt med. Arkiv*, 1892, Bd. ii., Heft 3), discusses the different varieties of lichen ruber, as the acuminatus, planus, obtusus, corné, moniliformis, sclerosus, etc., and states that vesicles have been described in eight cases in literature (Unna, Róna, Cæsar Boeck, Kaposi), he himself also having observed one having a peculiar aspect. There was first noted a bright-red spot the size of a mustard-grain, not sharply defined, disappearing under pressure, and having no connection with the hair follicles. The following day the spot was larger, slightly infiltrated, raised, polygonal, non-umbilicated. Upon these little papules some very small, flat vesicles, analogous to those of miliaria, of a yellowish-white color, developed. In three or four days they dried up and formed dry, waxy scales, which detached themselves easily, leaving the epidermis dry. The disease improved under

arsenic, but some months later there was a relapse in the form of typical flat, glistening papules without vesicles or scales. Two years later recovery had occurred, but the dark pigmentation, so characteristic of lichen planus, remained. Möller considers that the diseases should be grouped with the polymorphous dermatoses.

ELASTIC TISSUE OF THE SKIN IN MIDDLE-AGED AND ELDERLY PERSONS.

DR. E. SEDERHOLM (*Nordiskt medicinskt Arkiv*, 1892, Bd. ii., Heft 3) gives an elaborate and complete article on this subject, with drawings. Allusion can only be made to some of the observations. In regard to the senile alterations of the elastic tissue, the author confirms the researches recently published by Schmidt (*Virchow's Archiv*, 1891, Bd. cxxv). He, moreover, confirms the following facts: The elastic network of the excretory duct of the sudoriparous glands becomes transformed into an elastic membrane, which may serve to explain, perhaps, the diminution in old persons of the secretion of the sweat glands. The smooth muscles attached to the fibrous sheath of the hair become inserted into the elastic network of the skin after the fall or atrophy of the hair. The amount of the elastic substance becomes increased in the interior and around the smooth muscles. The elastic sheath of the corpuscle of Meissner becomes more bulky and more solid. Around the central mass of the Pacinian body an elastic network formed of anastomosing circular fibres is met with, the first traces of which appear between the ages of forty and fifty.

DERMATOL AS A LOCAL REMEDY.

WERTHER (*Deut. med. Wochenschr.*, No. 25, 1892) employed dermatol as a dressing in wounds with defective epithelium, burns, chronic ulcers of the leg, and opened carbuncles and phlegmons. In no case did the remedy, used in powder form, cause any injury to the wound or to the surrounding skin, nor in any case did it call forth systemic toxic effects, even where the wound was covered with a thick layer of the substance. The most striking results were noted in burns of the second degree, in which, after removal of the epidermis, the remedy was used as a dusting-powder, healing taking place rapidly, more so than with iodoform, and having the advantage over the latter in not being liable to produce poisoning. Excellent results were also obtained in chronic leg ulcers.

Dermatol may, therefore, be recommended for its drying, astringent, and antiseptic properties, as well as for its being innocuous and free of odor.

KERATOSIS FOLLICULARIS.

BOECK (*Brit. Journ. of Derm.*, September, 1892) describes four cases of this disease, known also and described by Darier as "psorospermose folliculaire végétante." Three of the cases occurred in one family, the disease in the father beginning at the age of sixteen, and in the two sons at the ages of eleven and eight. Two of the cases were perseveringly treated without permanent benefit. The scalp, forehead, axillæ, groins, the lower part of the

abdomen, the spinal regions, and the backs of the hands and feet, were the regions especially affected. The general health was good. The microscopic examination shows, as Boeck maintains, that the disease is a hyperplastic one of the epidermis, with the premature and irregular keratosis of the cells, observed especially in the interpapillary processes of the epidermis and at the orifices of the hair follicles, but rarely around the openings of the sweat glands. Boeck considers particularly the large round cells described by Darier as coccidia, abundant in the altered epidermis, and believes that they are only epidermic cells which have undergone abnormal keratosis with hypertrophy, the nucleus being traceable in most of them. The same opinion is held concerning the smaller round or oval homogeneous bodies contained in the epidermic crusts, called by Darier "grains." The likeness between the supposed coccidia and the peculiar bodies found in *molluscum contagiosum* is illusory, the latter being manifestly within the cells, while the former are really not intra-cellular.

The affection much resembles some forms of warts, and may be regarded as allied more to verrucosis than to any other well-known disease.

PLASTERS IN THE TREATMENT OF SKIN DISEASES.

BROCQ (*Journ. of Cut. and Gen.-urin. Dis.*, July, 1892) considers the medicated plasters, which have been perfected by the well-known apothecaries of Paris, Vigier and Cavailles. The usual excipient used is lanolin and elastic gum dissolved in benzine. The diachylon plaster may also be employed as an excipient in many cases, and particularly in mercurial preparations, on condition that it has been recently prepared. The simple plaster of the French Codex, to which is added a little dextrine, may be used for oxide of zinc, employed to protect the skin from friction and traumatism. Cod-liver oil plasters are useful in the prurigo of Hebra, to which a little menthol or naphthol may be added. Those of salicylic acid, 5 to 10 per cent., especially combined with green soap or pyrogallol, are efficacious in the hyperkeratoses; the "red plaster" of Vidal, in ecthyma, impetigo, furuncles, suppurating folliculitis, and dry eczema; the phenicated plaster mixed with the biniodide, and the ichthyol and sulphur plasters in acne; resorcin, or resorcin and creasote, and salicylic acid and creasote plasters in lupus; oil of cade, pyrogallol and chrysarobin plasters in psoriasis; and chaulmoogra plasters in lepra.

CURE OF RODENT ULCER BY PYOKTANIN.

DR. VON SCHLEN, of Hanover (*Brit. Journ. of Derm.*, July, 1892), gives the case of a man, aged seventy, with an ulcerating tumor the size of a dime on the right cheek, which was hard and bossy and extended almost to the bone. The diagnosis of carcinoma was confirmed by the microscope. Resorcin plasters and powder had failed. Pyoktanin was applied pure to the sore, and also injected into it—this treatment being excessively painful at first. After five days the secretion considerably diminished and the tumor flattened. In a month the ulcer was much reduced, and the hardness had disappeared. At the date of presenting the patient to the Medical Society the lesion was reduced to a faintly colored stain with a slightly elevated border.

THILANINE IN ECZEMA.

SAALFELD (*Therap. Monatshefte*, Nov. 1892) speaks well of this mildly stimulating remedy in some cases of eczema and in the superficial inflammations. It has the advantage of not producing irritation. It is obtained by the action of sulphur upon lanolin, contains three per cent. of sulphur, has a yellowish-brown color, and is of the consistence of lanolin.

PAGET'S DISEASE OF NIPPLE TREATED WITH FUCHSIN.

GEO. J. ELLIOTT (*Journ. of Cut. and Gen.-urin Dis.*, July, 1892) obtained favorable results with an ointment of fuchsin, three or four grains to the ounce of equal parts of lanolin and cold-cream ointment. It is not brought forward as a curative agent, but as a remedy which stays the progress of the disease, relieves the itching and soreness, aids cicatrization, and is useful where operative interference is not permissible.

TRICHLORACETIC ACID IN SKIN AND GENITAL DISEASES.

A. LANZ (*Archiv für Derm. u. Syph.*, Heft 4, 1892) speaks highly of the value of this substance as an application in papillomata, warts, pigment spots, and in chronic and papillomatous urethritis. It is almost painless, and, using caution, does not scar appreciably.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

GEORGE A. BERRY, M.B., F.R.C.S. EDIN.,
OPHTHALMIC SURGEON, EDINBURGH ROYAL INFIRMARY;

AND

EDWARD JACKSON, A.M., M.D.,
PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC; SURGEON TO
WILLS EYE HOSPITAL, ETC.

SARCOMA OF THE CHOROID.

DRS. THOMAS REID and A. MAITLAND RAMSAY report (*Glasgow Med. Journ.*, vol. xxxviii., No. 3) unusual cases of sarcoma originating within the eye. Reid's two cases were both of them marked by degenerative changes in one part of the tumor, with the development of new-formed tissue in another portion. One of these cases had developed within a year, and the other was of six years' standing. The latter terminated with secondary growths in the abdomen, and death a few months after the enucleation of the globe. Ramsay's case was also of six years' duration, and the tumor had been evident outside the eyeball by the end of the second year. At the time of removal it

occupied the whole orbit, extending back into the optic foramen. The original growth within the eyeball, however, was found to be only the size of a millet-seed.

TREATMENT OF CONGENITAL CATARACT.

M. DOR (*Revue générale d'Ophthalmologie*, tome xi., No. 5) classifies these cataracts as pyramidal, zonular, nuclear, total, and the unusual. In the great majority of pyramidal cataracts, vision is such that no treatment is required; yet in some an iridectomy for optical purposes may be indicated.

For zonular or lamellar cataract, when the opaque portion is not over 5 or $5\frac{1}{2}$ mm., he does iridectomy, the sphincterectomy with Wecker's scissors being an ideal operation but difficult to practise. If the opaque portion of the lens be over $5\frac{1}{2}$ mm. across, the lens is removed, the method of removal depending on the age of the patient. Under eight or ten years this will be by discission, repeated if necessary. Between ten and twenty years discission is done to hasten the opacification, and as soon as this is sufficiently advanced the lens is extracted by a modified linear method. Beyond twenty years the preliminary discission is to be followed by extraction with the upward flap operation without iridectomy.

Central or hard nuclear congenital cataract is to be treated in precisely the same way as the zonular.

Total congenital cataract is the form most frequently hereditary, often appearing some time subsequent to birth. If soft or liquid, the operation of choice is discission, which in case of undue irritation can be followed in a day or two by opening the anterior chamber with a paracentesis needle or lance-shaped keratome. The operation by suction is abandoned.

In cataracts of unusual forms each case must be considered by itself, and treated by the correction of ametropia, iridectomy, discission, or extraction according to the principles laid down for the other varieties.

CIRCUMBULBAR DERMOID CYSTS.

DR. J. MITVALSKY records the following conclusions (*Archives of Ophthalmology*, vol. xxi., No. 3) from a study of seventeen cases drawn from the clinic of Prof. Schöbl, of Prague: Such cysts on the surface of the body occur by preference in certain localities, and in greatest number in the neighborhood of the eyeball. Of these, fourteen were within the bony margin of the orbit, twelve at the outer, and two at the inner commissure. Two of the others were outside the bony margin and below the brow, and one lay below the external commissure at the margin of the zygoma. In structure these cysts vary widely, the wall always containing connective tissue, corium, and epidermis, and varying as to the presence of papillæ, muscle, and the various adnexa of the skin. Those showing hairs and glands were the most common. One case had sweat glands alone, and in one all the adnexa were absent.

The nearer the cyst is to fetal life the smaller it is, and the more regular its structure and the distribution of the adnexa. It becomes distended with the secretion of the sebaceous and sweat glands and the cast-off epidermic scales. Either the distention is uniform, in which case the adnexa are equally

distributed over the cyst-wall, or particular portions yield to pressure, becoming thinned and devoid of glands or hairs; while other portions retain them in their original relations. In the latter form of distention some of the sweat glands may be so distorted as to prevent the escape of their secretion, so that they become separately distended.

A minority of the cysts show parts that are devoid of any epidermoidal lining, there being instead new-formed tissue composed of round, formative, and giant cells. This tissue shows a decided tendency to become cicatricial but the cicatrix does not become covered with epithelium. The ulcerative process which inaugurates these changes stands in no definite relation to the age of the individual, but the anterior, more exposed portions of the tumor are first involved in it.

The secondary pathological changes include the formation of hyaline cartilage, calcareous degeneration, ossification, a degeneration into a peculiar tissue containing ganglion cells, hyperplastic arterial changes, and collections of lymphoid cells resembling follicles. The cyst-contents consist of fluid, atheromatous masses, epithelium, and oil either yellow or colorless.

These cysts have been in practice and in literature very frequently confounded with acquired retention-cysts or atheromata. Clinically, the dermoids are covered with movable skin, and lie close to the bone, upon which they may be movable or fixed; the atheromata move with the skin, and develop on the forehead, brow, and cheek, instead of the places of predilection for the dermoids. Dermoids with oily contents are transparent; atheromata are always opaque.

ACUTE PURULENT OPHTHALMIA.

W. T. HOLMES SPICER reports (*Royal London Ophthalmic Hosp. Rep.*, vol. xii., part ii.) an analysis of one hundred and fifty-eight cases, occurring almost entirely in adults, and treated in the Moorfields and St. Thomas hospitals. The most noteworthy results of the study of the subject are that it shows the extreme danger of postponing treatment—in other words, the great value of treatment; the increasing danger to the eye with increasing age; the weakening of the activity of the poison with the duration of the discharge; the care needed in the application of the protective shield to the sound eye; and, above all, the very great superiority of strong solutions of nitrate of silver over all other forms of local applications.

PROLAPSE OF THE IRIS AFTER THE SIMPLE EXTRACTION OF CATARACT.

DR. PARINAUD (*Recueil d'Ophthalmologie*, ann. xiii., No. 6) speaks of this as one of the two principal drawbacks to extraction without iridectomy, the other being the difficulty about completely evacuating all remnants of cortex and the consequent risk of secondary cataract. Prolapse he considers as of two kinds, due in general to quite distinct causes. Primary prolapse depends on anatomical conditions, and especially the situation and inclination of the incision. Secondary prolapse is due to a sudden reopening of the wound after union has commenced.

The liability to prolapse is increased according as the incision is made in

the periphery, that is, close to the base of the iris, and by making its direction perpendicular to the surface of the cornea the entanglement of the iris in the wound is facilitated. The original Graefe incision was about the most liable to this accident, and could not be used without iridectomy. To prevent primary prolapse Parinaud recommends the making of the incision within the clear cornea, so as to secure a flap three or four millimetres in height. If, at the completion of the operation, the iris does not incline to return to its normal position with a central round pupil, it may be well to wait some minutes, making light friction over the eyeball through the closed lids, and then to make another attempt to bring it into position by lightly stroking it with the spatula. If this does not secure its proper reposition it is better to do an iridectomy at once. When the anterior chamber is opened Parinaud believes that eserine can exert but a brief and feeble influence in contracting the pupil and keeping the iris in place, and that its use is, therefore, dangerous, because it gives a mistaken sense of security.

Secondary prolapse is favored by movements of the patient or by disturbance of the dressings or violence to the eye. To prevent it absolute quiet must be enjoined for the first three days, and as a precaution he would do iridectomy without other indications if the patient were restless or had asthma, or chronic bronchitis, or were so so fleshy that any movement of the body would be liable to require considerable effort. When the prolapse has occurred and the staphyloma shows no tendency to disappear or diminish, instead of attempting to excise it he prefers to touch it with the galvanocautery at intervals of three or four days—a safe and easy treatment, very satisfactory in its influence in securing the firm healing of the part.

HYPERÆSTHESIA PRODUCED BY THE APPLICATION OF COCAINE.

DR. E. MILLÉE reports (*Recueil d'Ophthalmologie*, ann. xiii., No. 6) a case in which the instillation of an ordinary solution of cocaine seemed to markedly increase the suffering caused by cataract extraction. The patient, a woman aged seventy-four years, submitted to a double extraction at Dr. Galezowski's clinic. Cocaine was freely used in the first eye, but the pain caused by the operation was so great that it was decided to try the other eye without it. It was done on the same day, and her behavior and statements indicated that the suffering was notably less with the second eye, although the operation was more prolonged. Both did well subsequently. The solution employed was used on other patients immediately before and immediately after it was used on this one, producing only the ordinary effects; her eyes were at the time free from any inflammatory complication.

PERITOMY IN PHTHYCTENULAR PANNUS AND KERATITIS.

DR. VERREY (*Revue Médicale de la Suisse Romande*, ann. xi., No. 11) reports twenty cases in which he resorted to this operation. The strip of conjunctiva removed was usually three or four millimetres in width, and the retraction of the parts widened the space of exposed sclera to six or seven millimetres, which space was scarified so as to sever all the vessels possible at the close of the operation. He believes the operation is not known and

practised as it should be, and claims for it the advantages of certainty in the result, rapidity of cure, and reduction to a minimum of the permanent corneal opacity remaining, and that its performance is quite within the ability of the general practitioner.

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC;

CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE;

CLINICAL LECTURER ON OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE;

VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

INTRA-UTERINE INJECTIONS OF GLYCERIN TO PROMOTE THE PAINS OF LABOR.

PELZER (in the *Archiv für Gynäkologie*, Band. xlii., Hest 2) reports four cases of lingering labor in which intra-uterine injections of glycerin were employed to increase the vigor of uterine contractions. A suitable syringe is filled with glycerin and connected by a rubber tube with an intra-uterine catheter. Air is carefully expelled from the catheter, which is then introduced as far as possible upon the posterior wall of the uterus, and within the os and cervix. Several ounces of glycerin are injected; to prevent its speedy expulsion, the patient is put upon the side in Sims's position, or in the knee-chest position.

ECTOPIC GESTATION, WITH THE BIRTH OF A VIABLE CHILD BY ABDOMINAL SECTION.

BOKELMANN reports (*Centralblatt für Gynäkologie*, 1892, No. 46) the case of a multipara who had ectopic gestation. The pregnancy was intra-ligamentary, and foetal movements and heart-sounds were plainly perceived. Signs of foetal death appeared, the patient lost flesh and strength, and suffered from rise of temperature. Abdominal section was performed, the foetal sac stitched to the abdominal wall, and the foetus removed. The sac was irrigated with 4 per cent. solution of boric acid, powdered with benzoate of sodium, and tamponed with iodoform gauze. Uninterrupted recovery followed.

In the same journal, VEIT reports ectopic gestation with total extirpation of the foetal sac and rupture of the mesocolon through extensive adhesions. The lesions were repaired by catgut, and the patient made a good recovery. In discussing this case, OLSHAUSEN remarked that the belief commonly held that interference with the mesentery will result in gangrene of the intestine is without foundation; in his own experience he had seen post-mortem examinations on two patients dying the sixth and seventh day after abdominal

operations, in which the mesentery was extensively injured; in neither case was gangrene of the intestine present. MARTIN added his testimony to the truth of what Olshausen had stated, namely, that a considerable portion of intestine can be separated from its mesentery without interfering with its nutrition. SCHLANGE thought that gangrene of the intestine depended more upon peritonitis than upon separation of the mesentery.

RETROFLEXION OF THE PREGNANT UTERUS FOLLOWED BY GANGRENE OF THE BLADDER.

LANDFERMANN (in an Inaugural Dissertation, Bonn, 1892) reports the case of a primipara suffering from retroflexion of the pregnant uterus. Reposition was easily performed; during the following night the patient aborted spontaneously; the placenta was delivered with difficulty, and its removal was accompanied with a discharge of offensive urine from the uterus. The patient continued to discharge pieces of necrotic tissue coming from the bladder through the vesico-uterine fistula. Under irrigation with boric acid solution the parts gradually healed, and the incontinence disappeared. Microscopic examinations of the specimens discharged showed them to come from the mucous membrane of the bladder.

CHOLERA DURING PREGNANCY.

KLAUTSCH (in the *Münchener medicinische Wochenschrift*, 1892, No. 48) reports ten cases of cholera occurring in pregnant women. One of these patients was in the second month of pregnancy, one in the third, two in the fifth, one in the seventh, four in the eighth, and one in the ninth month. One patient died undelivered; one perished after incomplete abortion at the second month; three died after premature labor in the fifth and eighth months. Three patients were discharged undelivered, the fœtus remaining alive. One patient recovered after the birth of an eight months' fœtus, and one patient recovered after the birth of a child at term. The patients showed two stages of the disease: one attended by copious evacuations from the stomach and intestines; the second, the period of intoxication or asphyxia. The patients were usually taken ill at midnight, or early in the morning; the injection of saline fluid in the muscles of the thigh relieved the patients of many symptoms of collapse. This temporary relief was soon followed by the development of a typhoid stage characterized by delirium, perspiration, flushed face, and intense activity. A period of the deepest coma followed this stage. In this the pulse was strong, dicrotic, and the respiration superficial. Hemorrhage into the conjunctiva was often present, respiration became very irregular, and death supervened. In common with Baginsky and Weber, Klautsch could not observe that pregnancy modified the course of cholera in the slightest.

The fœtus usually perished in these cases during the stage of intoxication or asphyxia. The mothers usually complained that fœtal movements were violent during the first stage of the disease. As causes for fœtal death are given the enormous loss of water, the lessened tension of the circulation, and impaired respiration following the profuse discharges of the mother. Slavi-

ansky has also shown that the epithelium of the placenta is extensively impaired, that hemorrhages occur in the placenta, and that premature separation of the placenta as reported by Tipjakoff is also present. Bacteriological examination of the fœtus in these cases, made in Hamburg by Simmonds, failed to reveal the cholera bacilli in the fœtus; that ptomaines and toxine produced by the bacilli may poison the fœtus is more than probable.

A further peculiarity in these cases lay in the fact that the fœtus remained after death but a short time in the mother's womb; this was due in part to hemorrhages in the decidua, and also to the irritable condition of the mother's nervous system. The dead fœtus was usually expelled at the end of the stage of asphyxia and the beginning of the stage of typhoid delirium. The birth was characterized by a few strong pains, followed by failure in the expulsive forces, so that instrumental delivery was frequently necessary. After the delivery of the child, involution proceeded promptly as a rule. In one case, slight post-partum hemorrhage was observed. In this case it was very difficult to secure good uterine contraction.

The prognosis for the fœtus in cases of pregnancy complicated by cholera is excessively grave. For the mother, the occurrence of pregnancy does not seem to seriously complicate the prognosis of cholera.

As regards treatment, pregnancy was disregarded in selecting therapeutic measures. Calomel was given, intra-venous injections of saline fluid, Cantani's method was employed, and excessive vomiting was treated by all available means. As a stimulant, camphor was given, either in oil or combined with alcoholics and with tea and brandy. Mild albuminoid foods were employed.

CHOLERA AND LACTATION.

GALLIARD (in the *Gazette Hebdomadaire*, 1892, No. 46) reports ten cases of cholera attacking nursing women, and was inclined, from a study of these cases, to the belief that the condition of lactation renders more favorable the course of the acute disorder. He finds that among the ten cases, 50 per cent. recover, whereas in general among pregnant women, not more than 33 per cent. survive the cholera. Examination of his records shows that his patients were treated by lactic acid, by intra-venous transfusion, and by stimulants. In some of the cases the supply of milk failed for a short time, but was re-established. In other cases the breasts became painfully engorged, while others suffered from a papular erythema. In none of the cases which recovered was the secretion of milk permanently arrested.

SYPHILIS AND ECLAMPSIA.

LANG (in the *Archives de Tocologie*, 1892, No. 11) concludes a study upon this subject as follows: Syphilis predisposes to albuminuria and nephritis, and hence pregnant women who are syphilitic suffer more frequently from albuminuria. It has been found to be a predisposing and aggravating cause of eclampsia. Lang supports these conclusions by an extensive survey of the literature of the question, in which he finds that while in pregnant women in general $3\frac{4}{10}$ per cent. have a simple albuminuria, in pregnant syphilitic women $5\frac{5}{10}$ per cent. suffer in this way. In general $1\frac{5}{10}$ per cent. of all

pregnant women have albuminuria and tube-casts, while the same are found in $2\frac{1}{2}$ per cent. of pregnant syphilitic women. While 88 per cent. of pregnant women having albuminuria and tube-casts suffer from eclampsia, 96 per cent. of pregnant syphilitic women having tube-casts and albumin are attacked by eclampsia.

THE TOXICITY OF BLOOD SERUM FROM WOMEN SUFFERING FROM PUERPERAL ECLAMPSIA.

TARNIER and CHAMBRELENT (*Annales de Gynécologie*, November, 1892), in a series of six cases of eclampsia, have investigated the toxicity of blood serum. The conclusions reached by them show that the blood serum of such patients is decidedly poisonous, and that its poisonous quality is in inverse ratio with that of the urine of such patients. There was no reason to suppose that the poisonous properties of the blood serum depended at all upon drugs given to these patients. A prognosis as to the gravity of a case of eclampsia may be based upon an investigation into the properties of the blood serum of the patient.

THE INFLUENCE OF QUININE UPON THE MILK AND UPON THE CHILD OF THE NURSING MOTHER.

OUI (in the *Archives de Gynécologie*, November, 1892) reports the results of his study as to the effect of quinine upon the milk of the nursing mother and the health of her child. He finds that, even given in free doses, it does not affect the milk, and has no unfavorable influence upon the health and well-being of the child.

TUBAL MOLES AND TUBAL ABORTIONS.

SUTTON (in the *Medical Press*, 1892 No. 2793) describes, in a well-illustrated paper, tubal moles. They differ from uterine moles in several particulars: The uterine mole is more or less spherical; the amniotic cavity is of fair size, and occupies the centre of the mole. The embryo may or may not be present. It is very misshapen when recognized, and the umbilical cord is often œdematous.

A tubal mole in its early stage is spherical, but later becomes ovoid; in most cases the amniotic cavity is excentric. The amnion is easily ruptured, and permits the escape of the embryo. This explains the difficulty of finding the embryo where the mole has been discharged through a rent in the wall of the tube, or through an enclosed ostium with hemorrhage. The mole is found in the clot, and the embryo can be found, if all the blood be collected and the clots carefully washed. In hard, firm clots, in which no amniotic cavity is recognized, the specimen must be cut in sections and examined for villi of the chorion. This part in sections has clusters of circular bodies occurring in groups. Under a low power, they show an external layer of epithelial-like cells with irregular cells in the centre. Under a high power, the epithelium becomes distinct. The presence of a tubal mole is decisive proof of pregnancy. Blood and blood-clots, however, may be found in the tube when pregnancy is absent. Accurately speaking, the term "hæmato-salpinx"

should be applied to a non-gravid Fallopian tube distended with blood secondary to occlusion of the abdominal portion of the tube.

By "tubal abortion," we understand the discharge of an ovum through the ostium into the peritoneal cavity, or by rupture of the tube when the ostium is enclosed. Hemorrhage is usually more abundant in tubal abortion than where the tube ruptures and the ovum escapes into the broad ligament. The uterine decidua is usually discharged at the time of the tubal abortion. Sutton concludes his observations as follows:

"1. The transformation of a tubal ovum into a mole or apoplectic ovum is beyond doubt. 2. The majority of specimens described as examples of hæmato-salpinx are gravid tubes. 3. Rupture of a gravid tube and tubal abortion are the common causes of pelvic hæmatocele. 4. Mesometric rupture of a gravid tube is a common cause of pelvic hæmatoma. 5. To affirm that bands of fibrin resemble chorionic villi indicates great want of histological knowledge. 6. Every clot of blood found in a Fallopian tube is not a tubal mole."

PLACENTA PRÆVIA COMPLICATED BY RIGIDITY OF THE NECK OF THE UTERUS; INCISION OF THE NECK; RECOVERY.

THE method of treating delayed labor from rigidity of the neck of the uterus, which has been recently advocated by Dührssen and others, was exemplified in a case reported by COEN in the *Nouvelles Archives d'Obstétrique et de Gynécologie*, 1892, No. 11. The patient was a primipara, five months pregnant. She had already suffered from severe hemorrhage. She was at once taken to the hospital, where examination disclosed placenta prævia. Under thorough antiseptic precautions, the Simon speculum was introduced, the cervix uteri grasped with tenaculum forceps, and two lateral incisions, extending to the vaginal junction, were made. The fœtus and placenta were removed, the uterus douched with an antiseptic solution, the incisions closed with catgut, and the uterus tamponed with iodoform gauze. An uninterrupted recovery ensued. The patient was subsequently examined, when it was found that the parts had healed perfectly. She was recovering from her condition of anæmia.

A FATAL CASE OF PUERPERAL SEPSIS, ILLUSTRATING THE MODE OF INFECTION AND THE INFECTIVE AGENT.

BUCHANAN (in the *Glasgow Medical Journal*, December, 1892) describes a fatal case of puerperal sepsis in which death occurred the twenty-fourth day after delivery. Microscopic examination of the fluids and tissues of the body demonstrated the presence of the streptococcus pyogenes. Old adhesions, binding down the right tube and ovary, were present; on the left side, the appendages were matted together, and in the general mass was found the ovarian vein distended with brownish pus. This could be traced to the left cornu of the uterus, where many dilated veins joined it. The walls of these venous trunks were yellow and roughened, suggesting pus. The left Fallopian tube was dilated with pus, twisted and coiled upon itself, and had become converted into a series of spaces filled with pus. The uterus was sub-involuted, its internal surface fairly healthy, except the placental site, where an ulcer

was present. A probe, passed into the veins on the left side of the uterus, emerged in the ulcer at the placental site. The popliteal and posterior tibial veins of the right leg were blocked by thrombi. The source of the infection was not known. It had evidently been introduced at the placental site, and thence had spread through the veins at once.

GONORRHEAL OPHTHALMIA OCCURRING IN UTERO.

FEIS reports (*Centralblatt für Gynäkologie*, 1892, No. 45) the case of a multipara in whom tedious labor occurred; a discharge of yellowish-green fluid from the os uteri was present during labor. Fifty-four hours after rupture of the membranes a female child was born spontaneously. Upon examination, double ophthalmia was found present in marked degree. The gonococci were demonstrated in the pus from the eyes; the mother made an uninterrupted recovery, and the child subsequently recovered in an ophthalmic hospital.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

KÜSTER'S SIGN IN DERMOID CYST OF THE OVARY.

LATZKO (*Centralblatt für Gynäkologie*, 1892, No. 48) calls attention to an observation made by Küster that dermoid cysts may develop originally in front of the uterus, and when dislocated from their position during the bimanual examination, return to it at once, just the same as normal ovaries. Ahlfeld, Freund, and Gottschalk confirm the observation, and regard this as a pathognomonic sign of the dermoid character of a cyst. The writer reports two cases of simple follicular cyst in which the tumor lay in front of the uterus, and behaved in precisely the same manner when it was displaced upward. He properly argues that this sign is not peculiar to dermoids, but may be observed in the case of any displaced organ or tumor within the peritoneal cavity, which has not been fixed by inflammatory adhesions. He concludes that the so-called "Küster's sign" is valueless as an indication that an ante-uterine tumor is a dermoid cyst.

FIBRO-MYOMA OF THE PELVIC CONNECTIVE TISSUE.

UEROW (*Centralblatt für Gynäkologie*, 1892, No. 48) reports a case of double fibro-myoma, only one other specimen of which has been described by Hofmeier. The patient was forty-four years of age, a VI-para, and had suffered from pelvic and abdominal pains, prolapse of the pelvic organs, and menorrhagia since the birth of her first child, when she sustained a complete

laceration of the perineum. On examination she was found to have marked cystocele, with a pedunculated tumor, the size of a hen's egg, growing from the anterior vaginal wall just behind the right nympha. To the left of the median line there was a second tumor, sessile and covered by the vaginal mucous membrane; it could be traced upward into the pelvis behind the ascending ramus of the pubes, behind and to the left of the bladder. In attempting to remove the pedunculated tumor its attachments were found to be deeper than was supposed, since the pedicle sprang from the connective tissue lying between the cervix uteri, the bladder, and the lateral wall of the pelvis. Enterocoele being carefully excluded, the tumor was dissected out, the hemorrhage being moderate. The other tumor, which was as large as an apple, had no pedicle and was dissected out from the subperitoneal space between the uterus and bladder, after which posterior colporrhaphy was performed, and the laceration through the sphincter was repaired by Tait's method, the beds of the tumors being previously closed by continuous catgut sutures. The result was entirely satisfactory. It was positively demonstrated that the tumors had no connection with any of the pelvic organs. An examination of the neoplasms showed that they were composed of a basis of connective tissue, in which were bundles of smooth muscle fibres. It was evident that they had sprung from the pelvic connective tissue, and had originally occupied a position within the pelvis, from which they had descended in consequence of the long-standing prolapse of the uterus and vagina. In view of Luschka's observation that smooth muscle fibres are not only normally present in the lower half of the broad ligament, but develop *de novo* in old cases of prolapse, it seems unnecessary to explain their occurrence in the tumors by reference to Cohnheim's embryonic theory.

EXTIRPATION OF PYOSALPINX AFTER PERFORATION.

WINTER read a paper on this subject at a recent meeting of the Berlin Obstetrical Society (*Centralblatt für Gynäkologie*, 1892, No. 48), in which he advocated cœliotomy for the removal of pus tubes that had previously ruptured into the vagina or rectum. The dangers to be apprehended in these cases are: 1. Escape of pus into the peritoneal cavity, which can be avoided by aspirating and washing out the sac before removal. 2. Opening into a hollow viscus, especially the rectum; but this is not greatly to be feared, for the fistulous opening is usually quite small, as it is shut off by inflammatory adhesions. 3. There are unusual difficulties in the technique, rendering the operation long and tedious, but these are best overcome by placing the patient in Trendelenburg's posture.

In the discussion which followed, MARTIN approved of the course adopted by the reader, and said that the prognosis was always good when the tube had opened into the rectum low down; if, however, the fistulous communication was high up in the large intestine, the perforation in the bowel must be sutured. If, after opening the abdomen, it was found that the gut would be extensively injured by separating the adherent sac, he advised puncturing the latter *per vaginam* (directing the needle with the fingers within the pelvis) closing the abdominal wound, and then incising and draining from below.

If, in removing such a pyosalpinx, pus escaped into the peritoneal cavity, it was generally sufficient to sponge it out without using general irrigation. The infectious character of the pus was not to be inferred from its foul odor alone, since stinking pus was sometimes sterile, while pus which seemed apparently harmless proved to be exceedingly virulent. He did not employ Trendelenburg's posture in these cases, but found it possible not only to separate firmly adherent sacs, but even to suture the intestine at the bottom of Douglas's pouch with the patient in the ordinary dorsal position. Martin affirmed in conclusion that he had not yet met with a case of pelvic suppuration in which vaginal hysterectomy offered any advantages over salpingotomy.

THE ETIOLOGY OF HYDROSALPINX.

JOSEPHSON (*Nordiskt med. Arkiv*, 1892, Band ii., Häft 5), as the result of a series of experiments on rabbits, in which he ligated the tube at different points (not sufficiently tight to interrupt the circulation), arrives at the following conclusions: 1. The lining membrane of the tube secretes a considerable amount of mucus, which is greatest in the distal portion. 2. This secretion is sufficient under favorable conditions to cause the development of a hydrosalpinx five times the size of the normal tube, without the presence of endosalpingitis. 3. Occlusion of the tube at its middle is sufficient to cause hydrosalpinx, which is always found on the uterine side of the obstruction and increases in size as the point of obstruction approaches the distal end. 4. The distal third of the tube tends to empty its contents into the peritoneal cavity, the middle third into the uterus.

EXTIRPATION OF THE SPLEEN.

LINDFORS (*Ibid.*) reports the case of a girl, aged twenty years, with enlargement and mobility of the spleen, attended with severe abdominal pains. There was moderate relative increase in the white blood-globules. Cœliospplenectomy was performed, the broad pedicle was ligated in six parts, and the tumor (which weighed thirty-six ounces) was removed without loss of blood. The patient made a good recovery.

TORSION OF A CYSTOCELE.

RHEINSTAEDTER (*Centralblatt für Gynäkologie*, 1892, No. 36) reports the following rare complication of cystocele: On examining the patient he found the vagina almost filled by an elastic oval tumor, which was covered by the vaginal mucous membrane. The uterus could not be felt. There were no vesical symptoms. A sound introduced into the bladder proved that it was independent of the tumor. The patient was to be examined under chloroform anæsthesia, since it was suspected that complete inversion of the uterus might exist. When she presented herself again for examination the tumor had changed its appearance, being now a sac into which a sound was readily introduced *per urethram*, proving that the torsion which had previously been present had been relieved spontaneously.

THE ULTIMATE DISTRIBUTION OF NERVE FIBRES IN THE HUMAN OVARY.

VON HERFFL (*Zeitschrift für Geb. u. Gyn.*, Band xxiv., Heft 2) presents the results of his microscopical studies of this difficult subject, illustrated by beautiful colored plates. He concludes that the majority of the intra-ovarian nerves are distributed to the bloodvessels, their number being so great that they actually constitute an essential part of the ovarian stroma. They form a dense network, but do not anastomose freely, and supply the capillaries as well as the vessels with muscular coats. In the latter the terminal fibrillæ are in intimate relation with the muscle cells. Only a few nerve fibres end in the muscle cells of the hilus or between the cells of the germ epithelium. The writer has demonstrated the existence of follicular nerve fibres, which enter the largest follicles, ending in the membrana granulosa, but only surround the smallest follicles. Further investigation is necessary in order to determine if these nerves also penetrate the cumulus proligerus. Individual nerve fibres can be traced to the germ epithelia, to the muscle cells of the hilus, and to the inner vascular area. The presence of ganglion cells has not yet been positively demonstrated, though their existence in the hilus is regarded by the writer as highly probable.

VENTRO-FIXATION AND ALEXANDER'S OPERATION FROM AN OBSTETRICAL STANDPOINT.

RIVIÈRE (*Archives de Tocologie et de Gynécologie*, 1893, No. 1), after a comparison of the effect of impregnation upon the uterus when artificially averted, arrives at these conclusions: In order that the operation may be successful, the uterus must be completely replaced and must be permanently maintained in its normal position. Alexander's operation is preferable to ventro-fixation from the standpoint of the obstetrician, since the normal relations of the uterus are more nearly preserved. Even when the organ is adherent, it is better, he thinks, to perform cœliotomy, to break up the adhesions, and then to shorten the round ligaments according to Wylie's method. The advantages of the latter are that the mobility of the uterus is preserved and the attachments of the ligaments are not disturbed.

VAGINAL HYSTEROPEXY AFTER THE METHOD OF NICOLÉTIS.

STEINHEIL (Paris Dissertation; abstract in *Centralblatt für Gynäkologie*, 1892, No. 45) describes the operation in detail and reports fourteen cases. It is based upon the anatomical fact that the uterus is supported in the normal position not by its ligaments, but by its intimate relations with the pelvic floor. The various steps of the operation are as follows: After eliminating adhesions by previous preparatory treatment, the uterine cavity is curetted in order to cure the accompanying endometritis. The uterine arteries are ligated, if necessary; a circular incision is made around the cervix, and the latter is separated from its attachments as high as the point of flexion, *i. e.*, to the junction of the upper and middle thirds of the cervix. The cervix is now amputated, the stump is drawn downward, and the posterior half is

sutured to the middle third of the posterior vaginal wall, while the anterior half is covered by the lateral edges of the vaginal wound. The method is applicable to the cure of either retro-, ante-, or latero-flexion of the uterus. In three cases the result was perfect after an interval of over two years.

PÆDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,

OF PHILADELPHIA;

ASSISTED BY

THOMPSON S. WESTCOTT, M.D.,

OF PHILADELPHIA.

ACUTE OSTEOMYELITIS OF THE PUBES.

GIRARD, of Grenoble (*Congrès Français de Chirurgie*, 1892, *procès-verb.*), reports the observation of two children who were affected with a juxta-epiphyseal osteoperiostitis of the descending branch of the pubes. He concludes that, in the case of children, acute phenomena near the coxo-femoral articulation, simulating coxalgia and presenting general symptoms like those of an acute osteomyelitis, should induce the surgeon to curette as soon as possible the pubes, ischium, or ilium, according to the signs furnished by a careful local examination. Such an operation may prevent a suppurative coxitis, just as an early operation upon the femur or humerus may prevent suppuration in the knee or shoulder. Such prompt intervention is even more necessary, for the pubes takes part in the coxo-femoral articulation, without being separated from it by an articular cartilage.

BLOOD-CHANGES IN SYPHILITIC AND RHACHITIC CHILDREN.

THE careful researches of SCHIFF (*Wiener medizinische Presse*, 1892, No. 7, p. 270) relative to the body-weight of syphilitic children, the number of red corpuscles and leukocytes, and the proportion of hæmoglobin in the blood, show that after the disappearance of active syphilitic phenomena there follows a marked anæmia characterized by oligocythæmia and oligochromæmia. This oligocythæmia is noticed only after the disappearance of syphilitic eruptions, seeming to require for its production a complete impregnation of the system by the specific virus of the disease. The proportion of hæmoglobin depends in a certain measure upon the number of globules. At the beginning, when the oligocythæmia is little marked, the proportion of hæmoglobin is greater than at a later period, but the decrease in proportion of hæmoglobin has no definite connection with the number of corpuscles in any given case. The red corpuscles are pale from a deficiency of coloring matter; the number of leukocytes remains normal.

In rhachitis the number of red corpuscles is more or less normal, while that of leucocytes is more or less increased. The proportion of hæmoglobin is notably diminished—in some cases by as much as 35 per cent. This diminution bears no direct relation to the decrease in number of the red globules. A certain degree of oligochromæmia exists in rhachitis as well as in syphilis.

BROMOFORM IN PERTUSSIS.

CASSEL (*Deutsche medicinische Wochenschrift*, 1892, No. 5, p. 100) presents the results of treatment of thirteen cases of pertussis by this drug. The dose was three to four drops three times a day for children under one year, and four to five drops for older patients. The total amount of the drug employed during the treatment of a case varied from ten to twenty grammes. The mean duration of the disease was 61.3 days, 45.9 days having elapsed before the cases came under treatment. The paroxysms diminished notably in frequency and intensity, but the duration of disease was not lessened. It may therefore be said that bromoform acts like all narcotics in diminishing the excitability of the respiratory mucous membrane, but it certainly exerts no specific action upon the disease. Perhaps with larger doses the paroxysms might be suppressed, but, in the author's judgment, the risk of intoxication is to be dreaded.

CREASOTE IN SCROFULOSIS.

SOMMERBRODT (*Berliner klinische Wochenschrift*, 1892, No. 26, p. 641), who was one of the earliest advocates of the treatment of tuberculosis by creasote, speaks highly of the same drug in the treatment of scrofula. The only precaution to be observed is not to give too small a dose. To children of seven years or over he does not hesitate to give as much as a gramme of creasote a day, either in capsule or dropped in milk or wine. This dose is reached gradually but quite rapidly, usually within ten days from the beginning of treatment. For children younger than six years, he commences with a drop a day, in milk or wine, and increases this until a daily dose of seven to ten minims is reached. The drug is best administered immediately after the meal, so as to avoid gastric irritation.

INTESTINAL OCCLUSION BY ACCUMULATION OF LUMBRICIDS.

PAUL SIMON, of Nancy (*Revue Médicale de l'Est*, 1892, in *Journal de Médecine et de Chirurgie Pratiques*, September, 1892, p. 666), makes this rare accident, which is altogether ignored by many writers, the subject of a paper, he having succeeded in collecting six cases, one of which is personal. His study shows that, contrary to many assertions, intestinal obstruction by masses of lumbricoid worms is not exclusively an accident of adult age; four times out of six it has been observed in children—a fact which is in accord with the frequency of helminthiasis in childhood.

Clinically, the sudden onset, the abdominal pain, vomiting, the tinged or even bloody stools, and the final collapse, recall very closely the picture of intestinal invagination. This diagnosis was made in Simon's case in the absence of clear indications from the previous history of the patient. The

differential diagnosis, it appears, should be based upon a careful history of the attack, and especially upon the fact of expulsion of worms by the mouth or anus, which has been observed in several cases. Perhaps, also, the microscopical examination of the stools might prove of use in revealing the presence of eggs of ascarides.

The affection is very serious, only one of the six cases having recovered, and this as the result of surgical interference; and although operation has not always been successful, it seems to offer the only hope of relief. The administration of anthelmintic drugs has proved inefficacious after obstructive symptoms have actually declared themselves.

THE REFLEXES IN TYPHOID FEVER OF CHILDREN.

ALBOUZE, in a recent thesis (*Etat des Réflexes dans la Fièvre Typhoïde chez les Enfants*, Lyon, 1892), deals with this interesting subject. After considering the significance of the absence of the reflexes, especially the knee-jerk, in childhood, he alludes to the contradictory results obtained by different observers, when the condition of these reflexes in typhoid fever has been the subject of investigation. These differences, he believes, can be explained by assuming that the researches have not been made at the same periods of the disease. As a result of numerous personal observations, he concludes that in typhoid fever in childhood, in the great majority of cases, the tendon reflexes are diminished in the acute stage, and increased in convalescence; and that from this sign an important prognostic indication may be drawn, a very feeble degree, or even entire loss of the reflexes, pointing to an extremely grave form of disease.

On the other hand, the disappearance of the exaggeration of the reflexes will indicate the absolute cessation of the action of the typhoid poison upon the organism.

THE RHYTHME DE DÉCLANCHEMENT AS A PROGNOSTIC SIGN.

PERRET, in a recent communication to the Société de Médecine de Lyon (*Gazette hebdomadaire de Médecine et de Chirurgie*, 1892, No. 35, p. 414) describes a peculiar alteration in the heart sounds which he has observed in seven children in the last stages of various tubercular affections. For want of a better name, he has designated the change as the *rhythme de déclanchement*, because of the suggestive sensation imparted to the ear. The peculiarity of the alteration lies in the fact that the two sounds of the heart are exceedingly close together—the systolic seeming almost to merge into the diastolic. As a result, the shorter interval of silence is almost imperceptible, while the longer has quite a marked duration. But more characteristic than this is the sensation given to the ear, which suggests the sudden letting-go of a spring stretched to its maximum, and this is doubled for the two sounds of the heart. In addition to this alteration of the rhythm, the pulse has been greatly accelerated in all the observations, the lowest count in any of the cases being not less than 140; and several times 168, 170, 180 beats, and even, in one case, 220 beats per minute have been recorded. At the same time these rapid pulsations had been perfectly regular. In all the cases the pulse has been small and the apex beat feeble. It is also to be noted that the sounds of the

heart were clear and free from adventitious sounds, except in one case of tubercular pericarditis. In two of the cases a fetal rhythm for several days preceded this *rhythme de déclanchement*, which might have been a mere coincidence, or, as the author suggests, the latter might be a more exaggerated degree of the former, depending upon a more profound alteration of the nervous system of the heart.

All the seven cases in which this alteration of cardiac rhythm was observed were rapidly fatal, and therefore the author believes the sign to be a reliable indication of impending dissolution. Excepting in one case, where the appearance preceded the end by ten days, death has occurred within three days, and in several cases within a few hours. He attributes this modification of the heart's action to the influence of toxins generated by microbic activity and acting directly upon the intra-cardiac ganglia.

COMPARATIVE MEASUREMENTS OF THE LIVER IN CHILDHOOD.

DAUCHEZ (*Revue mensuelle des Maladies de l'Enfance*, September, 1892, p. 410), as a result of comparisons of the measurement of hepatic dulness in children of various ages, in both health and disease, makes the following recapitulation :

1. That the exact valuation of the dimensions of the liver in children is difficult owing to the involuntary contraction of the muscles, to the thin lower border, and to the oblique projection of the upper border.

2. That upon the anterior face of the organ the apparent extent of dulness during life is almost always one to two centimetres shorter than the true extent measured upon the cadaver before and after opening the abdomen.

3. That the superior border of the liver corresponds, in general, to the fifth costal interspace.

4. That in health the extent of vertical dulness of the liver increases with a fair regularity for each year. This growth, appreciable between the second and ninth years, then ceases almost completely, to begin again at the twelfth year. Until the beginning of the eighth year the vertical dulness in health, measured in centimetres, corresponds to the age of the child, plus one, two, or three centimetres. After eight or nine years the extent of dulness corresponds approximately to the age, sometimes, however, remaining a little below this figure.

5. In a pathological condition, enlargements of the organ may be divided into three classes: *a*, the projecting liver (catarrhal jaundice, congestion); *b*, the large liver (malaria, cardiac disease); *c*, the very large liver (amyloid disease, hydatid cysts, syphilis, fatty liver).

6. The difference in measurement between a healthy and diseased organ in children of the same age varies from two to four centimetres under the influence of slight causes (congestion, catarrhal jaundice), and from three to ten centimetres under the influence of profound alterations.

THE TREATMENT OF ACUTE ARTHRITIS OF THE HIP IN INFANTS.

In a short paper under this title, DR. V. P. GIBNEY, of New York (*Medical Record*, October 29, 1892), reports two cases occurring in infants of ten months,

both of which made an excellent recovery. In the first child, the bony structures were not involved. It was really a peri-articular abscess, and, although deformity had arisen and the probabilities were that the process would have extended rapidly to the joint, an excellent recovery was obtained simply by free incision, drainage, and immobilization. In the second case the head of the bone was found loose in the cavity and was removed, and yet under the same treatment a perfect result was obtained. Both these cases were treated in an out-patient service, and required very little attention at home. The treatment which the author insists upon is early incision, thorough evacuation of all abscess cavities, correction of deformity and shortening at once, free drainage, and immobilization by plaster-of-Paris applied from the foot up over the hip and body to the axilla, and this dressing continued throughout the entire period of repair.

LAPAROTOMY IN THE TUBERCULAR PERITONITIS OF INFANCY.

ALDIBERT (*Revue mensuelle des Maladies de l'Enfance*, 1892, p. 249), in a critical review of the literature of this subject, has collected 46 cases of peritoneal tuberculosis in children treated by operation, with a result of 4 deaths and 42 cures, of which 9 persisted after one year, and 2 after two years. None of the deaths was immediately due to the operation itself, an improvement always following the laparotomy even in those cases ultimately fatal, so that the mortality of operation was actually *nil*. If account is taken only of those cases proven to be tubercular by histological and bacteriological research, there are 18 cases with 18 cures, 2 of which persist after one year, 3 after one year and a half, and 1 after two years; in other words, one-third of the cures are reasonably assured. These statistics demonstrate the curability of tubercular peritonitis by laparotomy, and this has been corroborated by post-mortem examinations, or by the evidence obtained in subsequent abdominal operations upon subjects of tubercular peritonitis treated by this method. In a case reported by Le Bec, for example, where death occurred a year and a half afterward, the peritoneum was found absolutely clean and free from granulations.

The method of operation varies according to the nature of the case. In free and generalized ascites the incision should be median and sub-umbilical. The value of lavage is not yet definitely settled. According to the statistics of Koenig and those of the author, the cures were almost as numerous when no lavage was employed as when this was done. It is, however, certain that lavage serves a definite purpose in bringing away pseudo-membranous débris and arresting capillary hemorrhage. Sterilized boiled water saturated with boric acid at a temperature of 100° F. may be employed for this flushing. Other solutions have been used by different operators, *e. g.*, salicylic acid (3 per cent.), thymol, phenic acid (1 per cent.), and tincture of iodine (1 : 1000), without any toxic effects. Drainage is deprecated as exposing to the danger of interminable fistulas.

The conditions which offer little hope of benefit by operation are: 1. Generalized miliary tuberculosis, although when an acute eruption of miliary tubercle is confined to the peritoneum there is no positive contra-indication; and 2. Tuberculosis of the intestine. Coexisting pulmonary disease is only

to be considered a contra-indication when it is far advanced. Albuminuria, unless accompanied by other signs of tubercular nephritis, is not a contra-indication; and, indeed, in the two cases in which it was noted, it disappeared soon after the operation.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

EDWARD F. WILLOUGHBY, M.D.,

OF LONDON,

AND

CHARLES HARRINGTON, M.D.,

INSTRUCTOR IN MATERIA MEDICA AND HYGIENE, HARVARD MEDICAL SCHOOL.

INJURIOUS CONSTITUENTS OF RUBBER ARTICLES WITH WHICH CHILDREN OF DIFFERENT AGES COME IN CONTACT.

A. BULOWSKY (*Archiv für Hygiene*, Bd. xv., Heft 2, p. 125) details a number of experiments made by him to determine what kinds of rubber articles may work injury to children. He disagrees with C. Ewald, who has maintained that vulcanized rubber nipples can injuriously affect infants by causing violent diarrhœas through formation of sulphuretted hydrogen gas, and shows that no such formation occurs. Rubber nipples, teething-rings, dolls, and other toys have often been found to contain varying amounts of lead, oxide of zinc, sulphate of barium, antimony, and other substances. Bulowsky examined seventeen gray rubber nipples, dolls, etc., and found one containing a small amount of lead, and one containing over 10 per cent. of sulphate of barium. They all contained from 32.18 to 58.66 per cent. of oxide of zinc. All of these articles sank in water. Thirteen black rubber nipples, rings, etc., yielded but small amounts of mineral matter, none contained lead or zinc, and all floated in water. A black rubber doll which sank in water yielded 47.03 per cent. of ash containing 14.48 per cent. of sulphate of lead. Five red-brown rubber dolls and toys, which sank in water, contained from 7.37 to 26.70 per cent. of sulphide of antimony. None of the above contained any arsenic.

Since small children have a strong tendency to carry everything to their mouths, experiments were made to determine what action the saliva may exert on these constituents of rubber, and what action, if any, may be exerted by milk on rubber nipples. Digestion of ten grammes of finely cut red-brown rubber, from a doll containing 26.70 per cent. of sulphide of antimony, with saliva for twenty-four hours gave no trace of antimony in the saliva. Digestion of eight grammes of another similar doll for forty-eight hours yielded also negative results, showing that antimony in rubber is harmless. Two similar experiments with a black doll containing lead gave traces of lead in the saliva. The ease with which chronic lead-poisoning is produced by small doses of lead must lead to the conclusion that such articles should be regarded as dangerous.

Experiments with a gray doll containing 58.66 per cent. of oxide of zinc, showed that saliva will take up traces of zinc. Sour milk was found to exert a similar action on rubber containing 33.71 per cent. of the same substance. According to Oesterlen, Heinzerling, Naunyn, Kobert, and others, small doses of zinc lead to chronic zinc-poisoning. Bulowsky's conclusions are that:

1. Rubber articles are harmless when they float, are elastic, and are of soft consistence.
 2. The greater the specific gravity, the greater the ash and the less the value.
 3. Black nipples and rings are harmless.
 4. Black dolls which sink are dangerous on account of lead.
 5. Red and red-brown dolls and toys are harmless.
 6. All gray rubber articles, especially those which children put into their mouths to suck, are more or less harmful on account of the contained oxide of zinc.
-

THE CHOLERA EPIDEMIC AT HAVRE.

GIBERT, in a communication to the Academy of Medicine (*Bulletin de l'Académie de Médecine*, October 3, 1892), gives an account of the Havre epidemic up to September 27th, and the measures adopted to combat its spread. The disease was not imported by sea, nor did it come from Hamburg, for although the steamer *Rugia* arrived at Havre from Hamburg on August 23d with a number of cases on board—the first cases to enter the harbor—there had already been seventy-one fatal cases in the city. Nor was it brought from St. Petersburg, where the disease did not appear until August 9th. Cholera was known to exist at Hamburg on August 18th, when two fatal cases occurred, while, as was learned on investigation, the first death at Havre occurred on July 15th, the second on July 28th, and the third on August 3d; after the latter date the cases increased rapidly. The first cases came from the suburbs of Paris.

Of the first fifty patients received in the two hospitals at Havre, forty-eight died. No epidemic at Havre ever began with such fatal results. Up to September 26th, in one hospital, which was badly managed, there were thirty-six deaths in fifty-seven cases, twelve of which arose within the walls. At the other hospital, which had better accommodations, there were six hundred and four admissions and two hundred and forty-four deaths.

A large number of patients died very quickly after seizure, having had no diarrhœa or vomiting.

On August 19th active steps were taken to combat the epidemic. A number of day medical stations and a permanent station for night-work were established, the latter connected with all the police stations by telephone, and the hospital service was well organized. The physicians attached to the sanitary service called every two or three hours at the police stations for addresses where any cases might have occurred, and recorded their observations and directions as to proper measures to be taken.

Clothing was disinfected by steam, dwellings by corrosive sublimate, sulphate of copper, carbolic acid, and other chemicals, and a general washing

down of gutters, roofs, courtyards, etc., was carried out. The efficacy of the measures adopted was evident within a very few days.

THE CHOLERA EPIDEMIC IN KASHMIR IN 1892.¹

THE Valley of Kashmir, surrounded by lofty mountains, is about 100 miles long by 20 at its greatest breadth, and about 5200 feet above the sea-level. The climate is variable: the average temperature in winter is 45°; in summer the sun is hot, and the noon temperature is about 90°. The spring is usually rainy; in summer it rains frequently, but the total rainfall is not high. Up to comparatively recent times, although cholera is perennial in the Punjab, the disease has appeared in the valley only when the epidemic in the Punjab has been of unusual severity; but now, owing to much-increased intercourse, Kashmir has, from a commercial point of view, become a part of the Punjab. Therefore, when in March and April cholera was raging in almost every part of the Punjab, it was anticipated that sooner or later the epidemic would invade Kashmir. The winter had been exceptionally mild, with very little snowfall, and was followed by a season of drought. During April and May, which months are usually rainy, scarcely any rain fell. Before the epidemic appeared the ground-water level was very low. The soil was infiltrated with decaying vegetable and animal matter, and presented a favorable nidus for the cholera poison whenever it might be introduced; and when this happened, the germs found other conditions favorable for the growth of an epidemic. The Kashmiris are notoriously filthy, and 125,000 of them are crowded into the city of Srinagar, which is in about the centre of the valley, is two miles long, and a mile and a half in its widest part. The city is built on both sides of the river Yhelum, and through the city also runs a canal, the Nalla Mar, which was once used as a source of water-supply, but now is but a string of cesspools. The population is crowded into 25,000 low, dirty houses, built irregularly on narrow lanes and alleys, which are used as latrines. There is no drainage, and the storm-water washes the filth and ordure into the Nalla Mar and into the river from which the drinking-water is obtained.

The general health of the people had been already much reduced by an epidemic of influenza. The difficulty of obtaining food and the Ramazan fasting had produced a condition of semi-starvation.

When the disease appeared at Srinagar the sale of unripe and rotten fruit and vegetables was forbidden; the people were urged to boil their drinking-water and to seek medical aid on the appearance of the first symptoms, and a circular giving full directions was extensively circulated. In spite of this, however, the beds and clothes of patients and the bodies of the dead were washed in the river and canals from which water was drawn for drinking and domestic purposes, and the dejecta of many cases in the boats on the river were thrown into the water, while drinking-water for the patients and others in the boats was taken from the same spot almost simultaneously.

During the epidemic it was observed that in the vast majority of cases the time of invasion was early morning, and that the eating of unripe fruit, or of

¹ The Cholera Epidemic in Kashmir, 1892. By A. Mitra, F.R.C.P., F.R.C.S., Chief Medical Officer, Kashmir. Calcutta: Thacker, Spink & Co.

ripe fruits in large quantity, raw cucumbers, fermenting buttermilk, raw raddish leaves and cabbage leaves, and putrid soft cheese, acted in a large number of cases as the exciting cause. The disease was confined principally to the poorer classes, though several cases occurred among those in the higher stations of life. The first outbreak of the disease was most malignant. It declined far more gradually than it began, and as it abated the type of the disease became less virulent until, finally, the last few cases were of extremely mild nature. The most congested parts of the town showed the largest number of seizures and deaths, and the progress of the epidemic was most rapid in the direction of the overcrowded parts where the sanitary conditions were necessarily bad, and slowest where the population was sparse.

In the treatment, the city was divided into districts; extra men detailed; one medical assistant was posted at each police station to attend urgent calls and a cholera hospital was opened. Out of a total strength of sixty medical assistants and attendants, who were constantly with the sick, but six were attacked, and five died.

The drugs used were numerous, and mostly in the forms of secret preparations, all of which appear to have been equally inefficient, the results leading to the conclusion that "we do not as yet know of a drug the administration of which can reduce cholera mortality in any appreciable degree."

From May 6th to August 15th there occurred in Srinagar 9041 cases, of which 5781 were fatal, and in the whole valley there were 16,845 cases, of which 11,712 terminated fatally.

DISINFECTION IN CHOLERA EPIDEMICS.

IN a proclamation relative to cholera issued by the Prussian Government (*Deutsche Vierteljahrsschrift für öffentliche Gesundheitspflege*, xxiv, p. 554) the following instructions for carrying out disinfection are given. As disinfectants, are to be used:

1. Milk of lime (one part of lime to four of water). This is to be kept in a well-covered vessel and stirred up before being used.
2. Chloride of lime, freshly prepared and well kept. Evidence of its good quality is its strong peculiar smell. It can be used in powder form, or in solution of two parts in one hundred of cold water. The latter should be allowed to settle and the clear supernatant fluid be poured off.
3. Three per cent. solution of potash soap.
4. Solution of carbolic acid. The crude acid is not suitable. The so-called hundred per cent. acid is a convenient form, and is quite as efficient as the pure acid. One part is added with constant stirring to twenty parts of hot three per cent. solution of potash soap. If the pure acid is used it may be dissolved in simple water.

5. Steam under pressure of not less than a tenth of an atmosphere.

6. Boiling water. The articles to be disinfected to be boiled at least a half-hour, the water to be boiling constantly, and the articles completely covered.

Manner of using disinfectants. 1. The liquid discharges to be received as far as possible in vessels, mixed with about an equal volume of milk of lime, and allowed to remain in contact at least one hour. Chloride of lime may be used, two heaping tablespoonfuls of the powder to each half-litre, and well mixed. Disinfection is complete in fifteen minutes.

2. The hands and other parts of the body coming in contact with infected articles (discharges, soiled clothes, etc.) must be disinfected each time by thorough washing with solution of chloride of lime or of carbolic acid.

3. Bed and body linen and other articles of clothing which may be washed should be put into receptacles with disinfectants immediately on being soiled. Either the solution of soap or of carbolic acid may be used. In the former they should remain at least twenty-four hours, in the latter at least twelve hours before being rinsed and further cleaned. Steaming or boiling may also be employed, but in this case they must first be well wetted with the disinfectant, and placed in well-closed vessels or bags, or wrapped up in cloths well wetted with the disinfectant, in order that those who handle them before disinfection may be exposed as little as possible to the danger of infection. In any event, all who touch such articles should disinfect their hands as above.

4. Clothing which cannot be washed may be disinfected by steam. Leather articles may be wiped with carbolic or chloride of lime solution.

5. Wooden and metallic parts of furniture and similar articles should be carefully and repeatedly rubbed with cloths wet with carbolic or potash soap solution. The floors of sick-rooms should be treated in the same way. The rags used should be burned. Floors can be disinfected also by milk of lime, which may be washed off after two hours of contact.

6. Walls and woodwork may be whitewashed. After disinfection, the rooms should be left at least twenty-four hours unoccupied and well aired.

7. The ground, pavement, and gutters fouled by cholera discharges, or in which suspicious waste runs, can be disinfected by copious flooding with milk of lime.

8. In privies a litre of milk of lime should be poured daily down each seat opening. The seats should be washed with the potash soap solution. All receptacles in which excrement is deposited must be well limed inside and out after being emptied.

9. Articles which cannot be treated as above, or when steam apparatus or disinfectants are not to be had, should be put out in the sun and air for at least six days, and protected from rain.

10. Articles of little value, as straw bedding for instance, should be burned.

[The Bavarian Government issued practically the same instructions several days later.—C. H.]

Note to Contributors.—All contributions intended for insertion in the Original Department of this Journal are only received *with the distinct understanding that they are contributed exclusively to this Journal.*

Contributions from the Continent of Europe and written in the French, German or Italian language, if on examination they are found desirable for this Journal, will be translated at its expense.

Liberal compensation is made for articles used. A limited number of reprints in pamphlet form, if desired, will be furnished to authors in lieu of compensation, *provided the request for them be written on the manuscript.*

All communications should be addressed to

DR. EDWARD P. DAVIS, 250 South 21st Street, Philadelphia, U. S. A.

Or

DR. HECTOR MACKENZIE, 77 Lambeth Palace Road, S. E., London, Eng.



Drawing of unusual form of disease of skin
in a case of Hysteria.

234^a

235

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES.

MARCH, 1893.

HYSTERICAL RAPID RESPIRATION, WITH CASES; PECULIAR
FORM OF RUPIAL SKIN DISEASE IN AN
HYSTERICAL WOMAN.¹

BY S. WEIR MITCHELL, M.D., LL.D.,
OF PHILADELPHIA.

It is some years since first I called attention to the subject of the rapid breathing of certain hysterical patients. Since then I have seen it often—indeed, within six months four times. Several of these cases were of unusual value, because long under my care or so situated as to admit of graphic representation of the respiration types.

The phenomenon must be rare, as I find no allusion to it since my own paper, in 1883. A male case, by E. Bischoff,² reported in 1874, has to me the look of hysteria, but such can hardly be said of Brinton's and my own male case,³ in which the rapid breathing was the reflex result of traumatism of the lung. This extraordinary case is still alive. In both of the cases just referred to, the type of respiration, though rapid, was deep and apparently laborious at times, so as always to lack the effortless regularity and seeming naturalness of the rapid hysterical breathing.

I have now seen so many of these cases connected with hysteria that I am able to formulate as to them certain conclusions.

The breathing is largely upper costal, sometimes exclusively so. It

¹ Read before the College of Physicians, December 7, 1892.

² Deutsche Arch. f. klin. Med., Bd. xii. p. 262.

³ Transactions of the Philadelphia College of Physicians, 1870.

is exceptional to find the relative share, as between chest and diaphragm, preserved. As a rule, the breathing is slight in amount—that is, superficial, but without appearance of effort. Usually, or early in the case, the patient is ignorant of the existence of the symptom. When this knowledge is once acquired the respiration rate is increased by excitement, even by the mere approach of nurse or doctor. In certain persons the symptom occurs only just after sleep, and may be quite absent in sleep—indeed, it is usually so. In some cases this symptom is almost the only distinct expression of hysteria, or is not present at all until the patient is emotionally excited. The number of respirations goes up and down rapidly, and without any marked coincidental change of pulse. This type of breathing is not a possible voluntary product. The effort of a healthy person to breathe as fast as these patients breathe causes exhaustion, and the graphic record is irregular and unlike that of hysteria. (See tracings.) Cases in males are more rare, and cannot always be with certainty regarded as hysterical. I shall speak of them further when quoting the cases referred to by Bischoff and that of Brinton and the author.

Dr. Coates¹ has reported a number of cases of rapid breathing. They were all people who believed, or were made to think, they had diseased lungs. From the attention they were thus led to give to these organs arose types of rapid breathing.

Case I., a woman, aged thirty years, had rapid respiration from presumed pulmonary malady. By making her count twenty without inspiring she was led to take a deep breath.

Case II. is unimportant.

In Case III., a girl, aged nineteen, there was presumption of tuberculosis, but no real lung disease. Her breathing was shallow and rapid.

Case IV., a girl, aged sixteen, was enabled by deep and abrupt quick breaths to stimulate for a time the strong, lifting impulse of cardiac hypertrophy. Two other cases are given, but in none is the number of respirations mentioned.

In 1883 Dr. E. Mackey² described a girl, seventeen years old, who, while sitting up in bed, breathed from eighty-eight to ninety-three times per minute, with now and then convulsive gasps. Her pulse was feeble, and beat sixty-four times to the minute. Temperature, 99° F. She had had "chlorotic anæmia" and a loud systolic basal bruit, which was still so loud as to mask all other chest sounds. Morphine and atropine overcame the peculiar respiration symptom, but on the third day it rose to 88-128, and thereafter the case displayed a large variety of hysterical symptoms. The respiration was shallow and short.

¹ W. M. Coates: Brit. Med. Journ., July 5, 1884.

² Edw. Mackey: Lancet, February 10, 1883.

The author calls attention to the difference between this and the rapid but deep breathing of certain cases of diabetic coma.

Dr. Bristowe,¹ amongst other hysterical disorders, seems to speak—if I do not misapprehend him—of hysterical dyspnoea with asthmatic symptoms. In one case there was rapid breathing, cough, and bloody expectoration, with no rise of temperature. He goes on to say that simple excess in the rate of breathing may be seen in hysteria. In the case of a woman, thirty or forty years old, with other hysterical signs, there were spells of rapid breathing, seventy or eighty respirations to the minute, and lasting from a few minutes up to several hours—the pulse remaining normal in frequency.

In my *Lectures on Nervous Diseases*² I gave several illustrations of this curious phenomenon. It is only necessary to refer to them. The one male case of rapid breathing there stated was seen by Dr. Brinton and myself, and is probably alone in the records of medicine as a case of rapid breathing (50–125)—caused by bullet wound of chest. The quick respiration is said to have come immediately upon the wounding of the lung. The constant dyspnoea, the type of breathing, which was normal, and other features, set this case apart from all others I have seen. Certainly it was not hysterical. In the same lectures I called attention to the diagnostic value of *rapid upper costal* respiration as sometimes of use in arousing suspicions as to the presence of hysteria in conditions of disease which would not otherwise suggest its presence. In some forms of insanity we may have rapid breathing, but the type has, in all such cases seen as yet by me, been normal and not merely costal, or with scarcely visible abdominal movement. Thus in wild mental excitement from any cause, and in acute mania, the respiration may rise to forty or higher, but, as a rule, the heart is then also in too rapid motion, and the chest movements are merely exaggerations of the normal action, and never, I believe, peculiar like those seen in hysteria. I saw but recently another illustration of the diagnostic fact just stated. A lady, aged sixty-two years, consulted Dr. John K. Mitchell, complaining of the following symptoms: Passive refusal to speak; no aphonia; great feebleness; absolute anorexia; much flushing of the face. I was inclined to regard the case as one of the forms of melancholia, until Dr. Mitchell called to my attention the fact that always on awaking, or from the excitement of a visit, her respiration rose at once to 50 or 60 without rise of pulse. The breathing was upper costal. He was inclined to think that hysteria was the dominating element in her case, and although I did not at first agree with him, his conclusion proved finally to be the correct one.

¹ Bristowe: *Lancet*, June 20, 1885.

² Second edition, p. 198 et seq.

Some of the most puzzling diagnoses we are called upon to make are those in which a serious fall has left the patient palsied or unconscious. Occasionally the rest of the symptoms which appear grave, are betrayed as hysterical by the rapid rate of the respiration—a thing so constantly overlooked that, save in acute pulmonary diseases, it is rarely stated.

I have seen, very lately, in consultation a lady who suffered from the fall of a block of wood on her head. She dropped insensible and remained thus for several days, her condition causing great alarm to her friends and immediate medical attendant. The pupils were largely dilated. There was no apparent palsy. The insensibility was not profound, but to appearance deepened slowly for several days. She awoke from this state at the end of a week, and thereafter had frequent vomiting; fixation of head—it could be turned from side to side, but not bent backward. The upper cervical region was sensitive, and pressure caused vomiting. The pulse was 80; the muscle reflexes all in excess; sensation was normal in all its forms. Meanwhile there was constant headache, but healthy eye-grounds. Many things in this collection of symptoms puzzled me. The case had very little of that look of hysteria on which one gets used to relying. But, the respiration was 50, and upper costal, and my decision, that all the phenomena were hysterical, has since been amply justified by the developmental changes of the case.

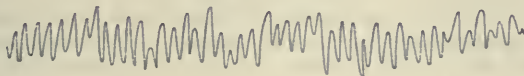
The following very remarkable case I give in full from Dr. Burr's notes:

CASE I. *Case of hysterical knee-joint; relief; relapse; long trance condition; alleged fast of sixty four days; recovery; aphonia; rapid respiration; unusual form of skin disease; failure of hypnotic treatment.*—The patient, a female, single, now twenty-four years of age, was first brought to the Infirmary for Nervous Diseases in November, 1883. The following notes were then taken:

Family and personal history negative. When fifteen years old she fell on her left knee while playing in the yard. She was carried into the house, put to bed, and for six weeks suffered much pain. The pain gradually disappeared, but she was unable to walk on the affected limb, and wore a bandage to support the knee. By this means she was able to walk with comparative ease. After a few weeks she removed the bandage. Almost immediately she fell, injuring the knee again. After the fall she was unconscious a short time. She was kept at perfect rest in bed for a month, the knee bandaged, and splints applied. For two years she suffered much pain, and was unable to do any work. She walked with crutches. Soon after this she had a violent attack of "hysteria." Dr. Halberstadt, of Pottsville, was called to see her. Dr. Halberstadt writes me: "When I was called to see Miss C. she complained of intermittent pain in the head, left eye and foot, ears, and left thumb. The eyes were sensitive to light. Arms and legs rigid. Marked sweating. Respiration was 180, and pulse so rapid that I could not count it. This I saw continue for two hours, but her mother declared it had

been going on for five weeks. The whole body moved at each inspiration, and her appearance was that of being worked by machinery. I

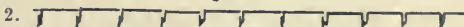
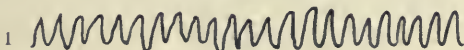
TRACINGS. (CASE I.)



Attempt to simulate rapid shallow breathing by a man in health



The lower lines mark seconds, the upper the respiration curves.
Rate, 60 per minute.



1. Respiration (126 to the minute).
2. Time (seconds).

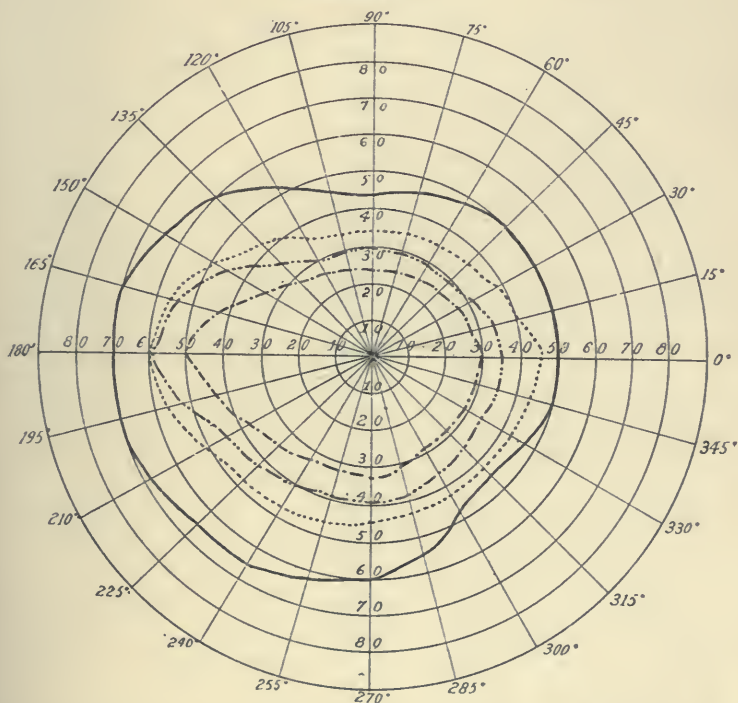


Tracing showing hysteric cough.

could detect no disease of the kidneys or uterus." At this time she was seen by a physician from Philadelphia, who pronounced her case hope-

cept that after the beginning of September she swallowed small quantities of water. She was given an injection weekly, which was always followed by a natural stool. She passed no urine. The bed was never even moist. The eyes were shut, and resistance was made on raising the lids. Respiration could be detected only on the closest inspection. She never moved nor even winked. Her face was yellow, but she did not lose flesh. Three or four times daily she would throw up large

DIAGRAM II.



Field of vision of the left eye for white, blue, red, and green. The outer continuous line indicates the limit of the form field; the broken lines the limits of the color fields. There is contraction of both form and color fields, the form field having suffered proportionately the greater contraction.

White —————
Blue
Red - - - - -
Green - . - . - . - . - . - .

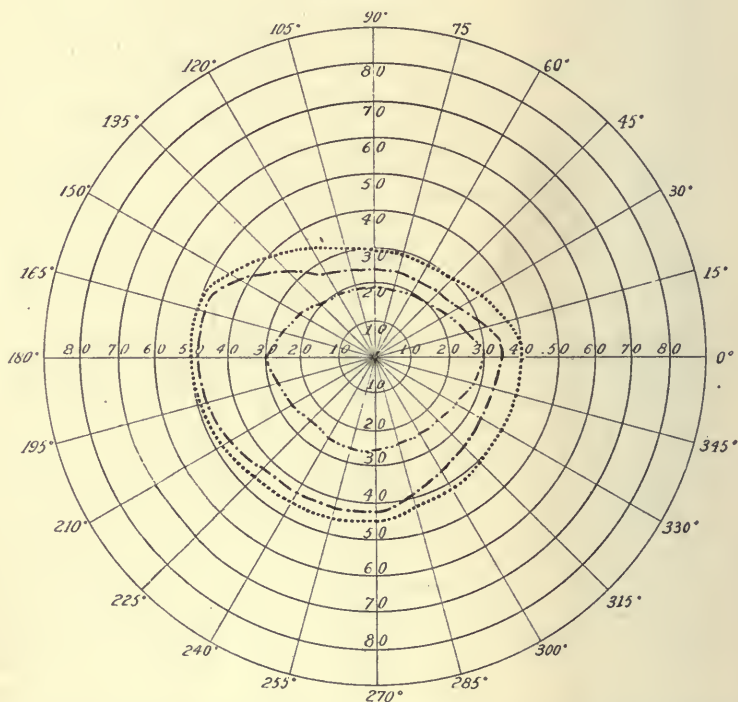
Red - - - - -
Green - . - . - . - . - . - .

quantities (sometimes enough to stain eighteen towels) of a dark-reddish fluid containing clots. The faradic battery was used on the arms and legs for five weeks without effect. Until five weeks before awaking, people had been permitted to see her, and she was, indeed, on exhibition. After this was stopped she one day suddenly, without known cause, awoke, crying bitterly. She denied all recollection of what had occurred during the "trance." The left arm and leg were powerless. She could not feel the faradic battery when applied to that side. Speech

was whispering. While in the "trance" the pimples spoken of above became confluent, and a thick crust formed.

Present state. Well nourished. Respiration varies from 120 to 150 per minute. It is shallow, almost entirely upper costal, and perfectly regular in rhythm. If the nose and mouth be held closed the respiratory movements continue, and after about one minute she makes one deep inspiratory effort. During sleep respiration falls to 18 or 20. The

DIAGRAM III.



Field of vision of the left eye for blue, red, and green. The broken lines indicate that the limits of the color fields are contracted. The blue and red lines coincided in the horizontal meridian of the temporal side, but this is not accurately shown in the diagram.

Blue

Red - - - - -

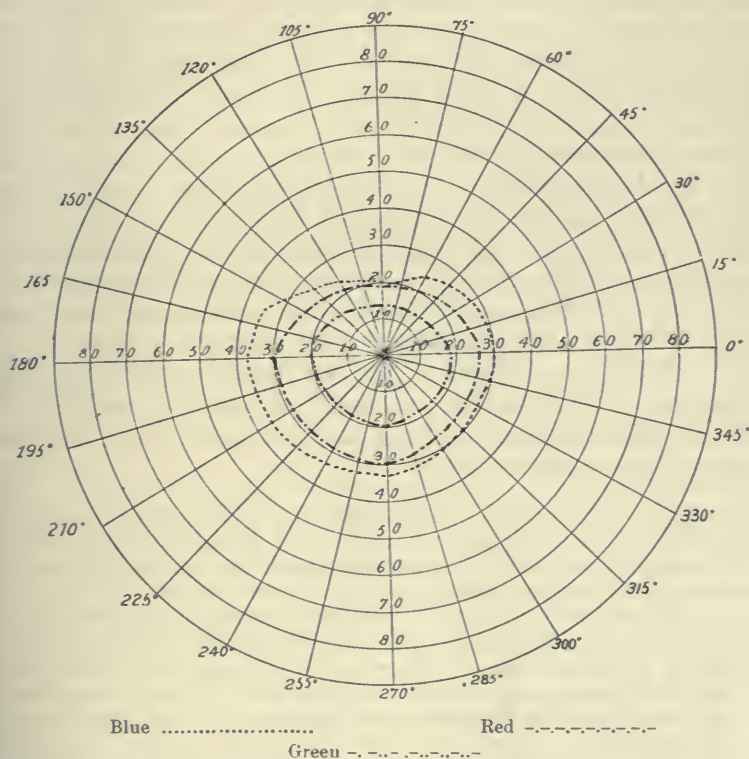
Green - . - . - . - . - . -

rate is increased when she knows she is under observation. She has frequent barking cough. The pulse averages 100 per minute. There is no wasting. When in bed she can move the left leg perfectly well against resistance, but drags the left foot when walking. Station is good. Knee-jerk is plus. Clonus is absent. The plantar reflex is marked. The elbow-jerk is present. Dynamometer: R., 95; L., 70. She is right-handed.

The tactile sense is hard to determine on account of the slight reliance that can be placed on her statements. The left side is more sensitive to

pain than the right. Covering a large part of the anterior aspect of the leg from above the ankle to below the knee is a thick, broad crust resembling very much the bark of an old tree. It is dark-gray and much fissured. (See colored plate.) On removing the crust, while the patient was hypnotized, there was found under it a grayish-white fibrinous material, from the surface of which oozed a little blood. Around the edges the skin was thickened, somewhat hardened and hyperæmic.

DIAGRAM IV.



The area was very sensitive. (The crust is in the museum of the College.)

Dr. de Schweinitz examined the patient's eyes, and reported: "Conjunctiva insensitive; pupils normal in reaction; good fusion power; no lesions in the fundus oculi. In the *right eye* the form field is normal in extent, there is contraction of the color fields, but they occupy their normal position. In the *left eye* there is considerable contraction of the form field, and in the horizontal meridian of the temporal side the red and blue lines of the color fields coincide. This may be seen in Diagrams I. and II., and also in Diagram III., representing the color fields alone, and taken one month later. In this chart it is evident that there is slight increase in the contraction of the color fields, but in other respects it is closely similar to the other diagrams. The

field of vision for colors taken during a semi-hypnotic condition shows that there was no material difference in color sense of the patient during this and the normal state, except that the color field is markedly contracted and that the blue and red lines practically coincide in the vertical meridians both above and below. This may be seen in Diagram IV."

REMARKS.—Both Dr. Burr and I repeatedly hypnotized this woman, but neither he nor I was able to see any good result. She became, under hypnotic influence, insensible to pain, and I was then able to remove from her leg the accumulated crusts. I hoped to get her, while hypnotized, to tell me the mode in which she had carried on her deceit as to her fasting, but I failed entirely. The tracings obtained for me in this case show very well the speed of breathing (see tracings). The partial influence of an order to breathe deeply, which, in the waking state, had no effect, was well seen in one of my tracings which has been unfortunately mislaid. I have added the curves obtained by the efforts of one in health to breathe like the patient. Their irregularity as contrasted with the forms of the hysterical curves of breathing is very interesting. I did this case no good whatsoever, because of her being in a ward where she was the subject of not unnatural curiosity.

Dr. Duhring's examination of the skin disease completes this interesting record. It is placed at the close of this paper. A careful search leads me to agree with Dr. Duhring in regarding this form of skin disease as of most unusual type.

CASE II.—S. M., female, aged twenty-one, single, mulatto. Applied for treatment at the Infirmary, September 10, 1891. There is no obtainable family history, and, owing to the woman's want of intelligence, her own symptoms and past history are inadequately related.

In 1887 she is said to have had a sharp bronchitis which lasted all winter and was accompanied with loss of voice for a year. This was probably hysterical, since in December, 1887, she suffered with colic, out of which arose a seven months' siege of varied hysterical symptoms, with frequent severe headaches and numerous convulsions of grave hystero-epileptic type. She was seven months in bed, but knows little of what passed. In May, 1888, she was taken to St. Luke's Hospital, New York, in a comatose state, and so remained four days. Having improved somewhat, she went home, where soon again she became wildly hysterical. Fits of severe character and two hours' duration were followed by stupor lasting many hours. This condition was present up to the time of her admission to the Infirmary.

At this date Dr. Hirst reports her generative organs normal, except that the womb is rather undeveloped. There is no ovarian tenderness and no evidence of epilepto-genetic spaces there or elsewhere. She has imperfect pain-sense on the left side—leg, arm, and body—with paresis of both legs and the left arm. The abdominal and thoracic viscera show no signs of disease. Appetite and digestion are normal. There is no anæmia. The knee-jerk is markedly increased. There is slight clonus—from three to five jerks. The pulse is normal; temperature

normal. Respiration varies from thirty to fifty per minute. It is of upper costal type chiefly, but at times the abdomen and lower ribs move. Generally it is difficult or impossible to distinguish the least motion in the diaphragm. During sleep the respiration rate falls to twenty per minute. These peculiarities of breathing were not known to the patient. They seemed to cause no fatigue, although to breathe voluntarily as she did, very soon produces exhaustion in the healthy. She improved rapidly as to all her hysterical symptoms except the breathing.

CASE III.—C. M., female, aged nineteen, single. At the age of seventeen years the patient had, after a slight accident in driving, some tenderness in the spine, and after a year, upon a fright after exposure in a thunderstorm, partially lost her voice. This was at times better, or well, but in March, 1890, she had laryngitis, with a sharp attack of the grippe, and then abruptly lost all voice except power to whisper. She was told in New York that it was not hysterical, but a rare form of loss of power in the abductor muscles of the larynx. Electricity gave no relief. The aphonia improved in the late summer. It is said to be nearly well, but the voice is easily tired. Up to November 23, 1891, when I first saw her, she had been very emotional and hysterical; tears and attacks of rigidity continued to trouble her. At this time she is in good flesh, rosy, and to appearance well, but relies much on her mother, and is at all times easily made hysterical. Her blood is close to normal in number of corpuscles and amount of hæmoglobin. All the digestive, renal, and menstrual functions are well performed. There is no ovarian tenderness.

Sensation. She is over-sensitive to a pinch of the muscles. The arms, back, and abdomen, but not the face, present small analgesic areas, irregular in form, one to two inches wide, and varying in location from day to day. There is no loss of sense of touch, locality, or temperature. The legs present no analgesic areas. There is pain in the back along the spine and over the loins. It is worse on exertion, and at times absent. There is constant severe pain in the posterior aspects of both legs in the gluteal regions. This is apparently a muscular trouble, since in all these parts pressure is painful.

Locomotion. When supine she can move all limbs well, and both extended legs can be lifted together. When erect she sways with jerky recovery of position. With the eyes shut this is enormously increased, presenting a true type of the hysterical ataxia I was the first to describe. Thus, when erect with the feet together, for a moment all is well, then she sways forward or backward or right or left eight or ten inches, and with an abrupt effort recovers her upright position, only to fall to and fro anew. Her walk is better, but is not quite regular, and she drags the left foot with the toes outward. The knee-jerk is much increased. There is slight ankle clonus—five or six movements—on the right. On the left it is absent. The bladder action is normal. All motion wearies her quickly. Her pulse is usually higher at night, but is very changeable. The respiration also varies, but on the least excitement rises and remains high for an hour or more. Massage, electricity, my visits, etc., all increase the respiration rate. Her pulse and respiration averaged as follows:

Respiration	.	.	40	Pulse	.	.	.	80
"	.	.	30	"	.	.	.	75
"	.	.	60	"	.	.	.	85

She was put at rest, forbidden to speak for three weeks, and given localized faradic currents and daily massage. She made a good recovery, but only after some months won complete use of all her powers.

I have seen, as I have said, other cases and many of this type of rapid hysterical breathing, but the cases here given may suffice.

REMARKS BY DR. DUHRING.

I had the good fortune, through Dr. Mitchell, to see Case I. a few weeks ago. The disease had existed three or four years, and there were several remarkable points about the crust. It differed in character from the known crusts, as those of late syphilis, and those from simple ulcer. It differed from syphilis in that it was made up largely of epithelium and not of dried pus. This was verified by the microscope. This, too, was manifested on seeing the lesion of the skin proper without the crust. There was no ulceration beneath the crust, but the epithelial layer and rete mucosum were atrophied and diseased. The papillary layer was reddened and infiltrated as seen in chronic tinea favosa. The cause and origin of this lesion and the crusts must be considered together, as they are a part of the disease. The interpretation of the cause as suggested by Dr. Mitchell, namely, that it is of nervous origin, is, I believe, correct. It is due to a degeneration of the nervous system, giving rise to local trophic disturbance of the skin. We may designate it as a peculiar trophic crusted disease of the skin. The state of the whole nervous system is accountable for this disease. It is a local manifestation of a general neurotic affection, and not a disease produced by changes in a single nerve or set of nerves.

The nature of the disease, pathologically, is an inflammation of the skin and subdermal tissue of a low type, due to aberrations of local nutrition. Sarcoma and other similar ulcerative or crusted diseases are not suggested by the appearance of the lesion. It is very difficult to class such cases in dermatology. It bears some resemblance, from a pathogenic standpoint, to keratoma and callosity. The disease may be grouped with such cases as that of the one described and portrayed in the second number of the *International Atlas of Rare Skin Diseases*, by E. Besnier, with the title "Keratoderma Erythematosum." In regard to the crusts on bromide ulcers, if they are examined they will be found to be made up of sebaceous matter and pus—they are, in fact, largely puriform in character. I saw a noted case in London, shown to me by my friend Dr. Tilbury Fox. I have a photograph of it. The crusts were the size of a hand and were made up of sebaceous matter and pus.

MOVABLE KIDNEY; WITH A REPORT OF TWELVE CASES
TREATED BY NEPHRORRHAPHY.¹BY GEORGE M. EDEBOHLS, A.M., M.D.,
GYNECOLOGIST TO ST. FRANCIS HOSPITAL, NEW YORK.

IN the opinion of the writer there is scarcely a subject of more practical importance and interest to the gynecologist than that of movable kidney. This conviction has steadily grown upon him since his attention was first attracted to the subject, nearly four years ago, since which time he has had abundant opportunity to note both the frequency of its occurrence in women and the important interdependent relations between movable kidney and diseases of the female sexual organs.

Indeed, in view of the fact that the subject of movable kidney has been more or less fully treated of within the past dozen years by Hahn, Landau, Keppler, Pokrowsky, Lindner, von Fischer, Litten, Henderson, McCosh, Keen, Senator, Schmitt, and others, it is astonishing how little is known of it— or, at least, how little practical application is made of this knowledge by both general practitioner and gynecologist. The latter could have found in it a solution of many perplexing difficulties which beset him in daily practice. Why, for instance, a woman the lesions of whose genital tract have been successfully repaired by the gynecologist's art, and in whom no organic lesion can be discovered elsewhere, should after operation, in spite of the gynecologist pronouncing her well, persist in asserting the contrary and in clinging to most, if not all, of her former symptoms, would no longer be an enigma. The solution, in many instances, might be found in the vicinity of the renal regions. There, also, in not a few instances, can be found the explanation of symptoms usually interpreted as dependent upon disease of the female genital organs, when a most critical and painstaking examination of those organs fails to reveal the least evidence of disease. Instances illustrating both of the above assertions I have repeatedly encountered in my own practice, and a few of them will be found recorded in the histories of cases appended to the end of this article.

The main explanation, to my mind, of the existing general apathy and indifference to a subject of such great practical importance lies in the hitherto unsatisfactory therapeutics of the condition. A movable kidney is, in the vast majority of cases, one of the easiest things in the world to diagnosticate, provided only its possibility in a given case be borne in mind. But when it comes to treatment, bandages have proved

¹ Read before the Section on Obstetrics and Gynecology, New York Academy of Medicine, October 27, 1892.

inefficient; nephrectomy is a too radical and unjustifiable procedure; nephrorrhaphy has hitherto proven more or less disappointing, owing, as the writer believes, to imperfections of technique; massage has been too little tried, and meets with too general incredulity. It is one of the main purposes of this paper to furnish evidence that nephrorrhaphy, carefully performed after the method to be described later on, is capable in most, if not all, uncomplicated cases of movable kidney, of correcting the abnormality, and of relieving greatly or removing entirely the symptoms dependent thereon.

FREQUENCY.—The frequency of the condition has been variously estimated by different writers, depending probably upon the greater or less fidelity with which each patient presenting is examined for the existence of the condition, as well as upon varying individual ability to recognize the minor degrees of the abnormality. While some authorities assert that movable kidney is of very rare occurrence, Lindner, for instance, states that he found it in one out of every five or six women examined. My experience has satisfied me that Lindner is very nearly, if not quite, right. I have taken the trouble to look over the histories of the last 500 women examined by me, and among them I find 90 recorded as possessing, amongst other things, a movable kidney. I am confident that a similar experience awaits every gynecologist who will make it a matter of routine to examine every woman consulting him for the existence or otherwise of the condition. I should, however, not like to be understood as asserting that every movable kidney produces symptoms. On the contrary, I am convinced from personal observation that such is not the case, and that many owners of movable kidneys experience no noticeable discomfort from the condition. Just here lies the difficulty: to determine exactly what symptoms, in a given case, are probably due to a movable kidney, inasmuch as the lesion is so frequently associated with disturbances in the genital sphere and many symptoms are common to the two conditions.

Further on I hope to show, however, that this differentiation may be made with reasonable accuracy in nearly all cases.

ETIOLOGY.—The etiology of movable kidney is still greatly a matter of speculation and theory, and it will probably require considerable added experience, and perhaps experiment, to satisfactorily elucidate this part of the subject. Bartels is inclined to regard lacing as a causative factor in both men and women. I am led from my own observations to believe that the very opposite is the case, and that tight lacing is the most effective external agent we can apply to maintain a kidney in its normal position. Indeed, I am in the habit of prescribing a well-fitting and rather tight corset for women with movable kidneys, provided no contra-indication to the corset is found in the condition of the genital organs. In the few cases in which I have met movable kidneys in men, I have

advised the wearing of a tight elastic abdominal supporter, the main compression being made about the waist.

Laxity of the abdominal parietes, the result mainly of childbearing, has been regarded by many as a causative agent of movable kidney. This hypothesis, however, will not bear close scrutiny. It loses its value when we consider that as many, if not more, movable kidneys are found in virgins and nulliparæ as in multiparæ. The statistics of Lindner show this, and my own experience bears him out. That, however, laxity of the abdominal walls bears a certain, though small, share in the etiology of the affection, I am not prepared to deny.

The theory of a congenital anomaly or predisposition to the disease is one difficult to either prove or disprove. For the present it is a mere conjecture as far as concerns *movable* kidney; a *floating* kidney may depend upon a congenital mesonephron.

The theory which upon critical and judicial review of the cases under my observation seemed most satisfactorily to account for the development of the condition in a majority of instances, is that of absorption or atrophy of the peri-renal fat. It has been quite a common experience with me to note the beginning of symptoms due to movable kidney immediately after recovery from one of the wasting diseases, or on the occurrence of a noticeable loss of weight from any cause. My own clinical observation, therefore, would seem to indicate that loss of peri-renal fat is the chief etiological factor in the production of movable kidney, though I am inclined to believe that other causative agencies may play a part, less important and frequent though it be, in the development of the disorder. It is quite easy, for instance, to understand how excessive and prolonged vomiting might occasionally loosen a kidney, as in a case reported by Dr. C. O. Baker (*N. Y. Medical Record*, May 14, 1892). The patient, himself a physician, first noticed the development of a movable tumor (kidney) in the right hypochondrium after a voyage in which he suffered much from incessant sea-sickness. Even in this case, however, rather clearly as the evidence points to vomiting as the cause, it may be questioned whether the movable kidney was not a result of the wasting of fat, including the peri-renal, due to the prolonged inanition.

A movable kidney may rarely develop quite suddenly, as in the case just mentioned, or the condition may be of more or less rapid growth. While the majority of movable kidneys undoubtedly require months, and even years, to develop, I have several times been in a position to observe the development of a mobility of six to eight centimetres in a kidney which, from personal examination, I knew to be in its proper place two or three months previously. One or two such instances are narrated in the appended histories.

For practical purposes a distinction should be made between movable and floating kidney, although the latter condition probably represents,

in some instances at least, but the final stage of development of the former. A movable kidney, as I interpret it, is one movable within a pouch or hollow formed within its own fatty capsule; while a floating kidney is one supplied with a mesonephron, the length of which determines the extent of its mobility. The floating kidney has normal relations with its fatty capsule, or at least that portion of the latter which it carries with it in its excursions. The movable kidney, for reasons which will appear further on, produces more distressing symptoms than the floating kidney, although the latter has by far the greater range of mobility. The movable kidney is by far more frequent than the floating kidney. I have met at least fifty movable kidneys to every one floating kidney, and it is with the movable kidney alone that this paper has to deal.

Litten makes a further distinction between movable and wandering kidneys on the one hand and a dislocated kidney on the other hand. By the latter term I presume he means a displaced kidney fixed in its abnormal situation. I have met the latter condition but twice, the right kidney in each instance being fixed alongside the spinal column some eight centimetres below its normal position, and being insusceptible of reduction. A characteristic of the movable kidney is the facility with which it can be brought back to its normal situation.

Litten still further refines between a congenital wandering kidney (floating kidney?) and an acquired movable kidney. As used by the Germans, the term *Wanderniere* (wandering kidney) embraces both movable and floating kidneys. For reasons already stated, however, I prefer to maintain the distinction between the two.

The path of dislocation of a movable kidney varies. In a proportion of cases, estimated at 75 per cent. by Lindner, it becomes displaced outward and then forward and inward along the course of the lower ribs until it reaches the region of the anterior superior iliac spine. In the remaining cases it moves directly inward and downward. Whatever may have been the original path of dislocation, the result, as far as the final position of the movable kidney is concerned, will be the same as soon as the organ has attained a range of mobility of ten to twelve centimetres. When this range of mobility has been attained, the kidney can be readily moved about anywhere within the segment of a circle whose centre is at the normal situation of the kidney, whose radius measures ten to twelve centimetres, and whose arc extends from the vicinity of the anterior superior spine of the ilium to the under surface of the liver.

The subject of movable kidney is of paramount importance to the gynecologist, because of its preponderating frequency in women as compared with men, and because its symptoms are so similar in many respects to those accompanying various lesions of the genital sphere.

Perhaps, however, the comparative frequency of its occurrence in the sexes is not as great as usually supposed. Abdominal palpation is practised much more frequently upon the female than upon the male, and the gynecologist, with tactile sense sharpened by daily practice in bimanual examination, is much more likely to discover minor degrees of the lesion than is the general practitioner. And it is just these minor degrees that are the unrecognized cause of so much suffering and distress.

My practice being exclusively gynecological, I am scarcely in a position to estimate from personal observation the frequency of the occurrence of movable kidney in the male. I have seen but two cases in men, both of them during the past year. Both were personal friends, who, in speaking of their health, casually mentioned a combination of symptoms, such as is usually found associated with movable kidney. In both, upon examination, I found the right kidney movable to the extent of about ten centimetres.

Movable kidney, in women at least, occurs on the right side in the overwhelming majority of cases. I have seen the condition but four times on the left side, in three of the patients the right kidney being movable at the same time and to a greater degree than the left. In the fourth patient (Case I.) the left kidney became movable six months after fixation, by nephrorrhaphy, of a movable right kidney. Why the right kidney should so much more frequently become movable than the left I can only surmise. Perhaps it is more exposed to displacing influences on account of its situation immediately beneath the liver, a heavy organ, subject to great fluctuations in size and weight.

SYMPTOMS.—As already stated, many of the symptoms of movable kidney are common also to many diseases of the sexual organs in women. The symptoms of the earlier and of the later stages of movable kidney differ considerably from each other, those of the earlier stages being by far the more distressing. The suffering, according to my observations, seems to be greater with a kidney movable from four to ten centimetres; after the latter limit of mobility has been exceeded the symptoms generally abate in intensity and some of them disappear altogether. Quite enough morbid manifestations, however, remain to make the patient more or less a chronic invalid. It is but just to state, however, that this observation of the greater severity of the symptoms in the earlier stages of movable kidney, as compared with the later, does not harmonize with the experience of Lindner and others, who claim that the greater the degree of mobility the more severe and numerous the symptoms.

I will first describe what I consider to be the most prominent and characteristic combination of symptoms, as I have found it, in *uncomplicated* cases of movable right kidney, in which the mobility ranges

from ten centimetres downward; enumerating subsequently the other symptoms more or less frequently observed. *The morbid phenomena due to a movable right kidney in its earlier stages are: digestive disturbances, chronic in character; general nervousness; epigastric pain, usually located somewhat to the left of the median line, at or near the free border of the left costal cartilages; cardiac palpitation; inability to feel comfortable or to sleep when lying on the left side.* These symptoms, or as many of them as may be present in the particular case, are all more or less constant and chronic in character. When disease of the genital apparatus is associated with movable right kidney, the symptoms immediately become more manifold, and it requires close clinical study to differentiate between the manifestations belonging to the renal and the genital abnormality, especially as a movable kidney exceptionally produces symptoms such as dysmenorrhœa and atypical uterine hemorrhages which generally point to lesions of the genital tract. I will, therefore, dwell somewhat upon the symptoms above enumerated as usually accompanying movable kidney, before enumerating the other morbid manifestations more or less frequently observed.

The digestive symptoms usually observed are, in their order of frequency: anorexia; gaseous eructations; epigastric pain and distress, most severe from half an hour to three hours after meals; constipation; occasional vomiting; foul breath. Quite a number of patients suffering from movable kidney have been treated for years by the ablest practitioners for gastro-intestinal or intestinal catarrh before coming under my observation, and it is one of the most gratifying experiences to see how rapidly and completely these symptoms usually vanish after fixation of the movable kidney by a bandage or by nephrorrhaphy.

General nervousness, of greater or less degree, but always decided, is the next most frequent concomitant of movable kidney. There is nothing peculiar about this nervousness to distinguish it from that due to other causes. It disappears to a marked extent, though not as rapidly or completely as the digestive symptoms, after fixation of the kidney.

The epigastric pain associated with movable kidney is quite constant in its location, being generally referred to a point some five to six centimetres to the *left* of the median line, at or near the free border of the left costal cartilages. The nature and source of this pain are not quite clear. It is not markedly increased by pressure, and in this respect differs from an ordinary intercostal neuralgia. It appears to be independent of the digestive processes, occurring at any time, irrespective of the fulness or otherwise of the stomach. Landau calls it a *cardialgia*, and, for reasons to be explained later, I am of the opinion that this term is probably correct, albeit the pain is somewhat lower than that

of cardialgia from other causes. This pain also disappears promptly after the malposition of the kidney is rectified.

Cardiac palpitation is one of the most annoying and persistent symptoms. In some patients it is almost constant, and occasionally they become so habituated to it that they are unaware that their heart is beating rapidly, although the examiner may find the pulse 120 or more. This symptom, like the general nervousness, yields more slowly than the other symptoms after fixation of the kidney.

The last of the principal symptoms is inability to rest with comfort or to go to sleep lying on the left side. That this symptom is not by any means imaginary is attested by the frequency with which patients complain of it before they are informed that they have a movable kidney, and by its prompt and complete disappearance after fixation of the kidney.

Among the other symptoms which, compared with the above, occur with comparative rarity in uncomplicated cases of movable kidney, I will merely mention the following: Vertigo; a dull backache; painful menstruation; increase of the menstrual flow; pain in region of displaced kidney; mild urinary symptoms, such as intermittent hydro-nephrosis, moderate polyuria, slight frequency of micturition; icterus; anæmia due to interference with the digestive functions. It is unnecessary to dilate upon these symptoms; they are quite secondary in importance to the five symptoms above described.

It is quite curious and interesting to observe the influence of menstruation and pregnancy upon the symptoms of movable kidney, these being always intensified during menstruation and during the early months of pregnancy, while they completely disappear during the latter half of utero-gestation. The explanation is probably this: During menstruation and the early months of pregnancy the increased collateral flow of blood to the abdominal organs produces hyperæmia and increased weight of the displaced kidney, with intensification of the symptoms. During the latter half of pregnancy the uterine tumor pushes the kidney upward and supports it in its proper place in a better manner than can be done by any abdominal supporter. It has been an oft-repeated experience with me to have patients state that the only times at which they have felt well during many years past, ever since the beginning of their illness, was during the latter half of their pregnancies, whatever the number of the latter may have been. I have also noted in one case the appearance of symptoms of movable kidney immediately following the removal of a large ovarian cystoma. The cyst had, until removed, sustained the movable kidneys in their place, and thus kept the symptoms in abeyance.

Authors are not as yet agreed upon the mode of causation of the symptoms due to movable kidney. The majority of those who have

expressed themselves upon this subject are of opinion that obliteration of the lumen of the duodenum by the displaced kidney leads to retention of the contents of the stomach, and, as a result of this, secondarily to the production of the other symptoms above narrated. They differ somewhat in their views as to how this duodenal obstruction is brought about. Lindner, for instance, believes that the descending kidney obliterates the lumen of the duodenum by traction, claiming to have substantiated this view by experiments on the cadaver. Bartels, on the contrary, holds that the middle or descending portion of the duodenum is closed by direct pressure upon it of the displaced kidney.

With all due respect to these high authorities and those who agree with them, I am of opinion that mechanical occlusion of the duodenum is insufficient to account for the symptoms of movable kidney, even if the hypothesis of a mechanical occlusion of the duodenum occurring as a sequence of movable kidney could be proven true, which, as far as I know, has not hitherto been the case. I think the explanation of the symptoms must be sought in other directions, and personally am inclined to look for it in disturbances of the abdominal sympathetic system, more especially of the solar plexus with its branches distributed to the abdominal and thoracic viscera. After reading the extract from Gray's *Anatomy*, which I shall presently quote, it does not seem to me difficult to understand how a movable kidney, by pressure and traction, by stretching and irritation of various parts of the important sympathetic centre called the solar plexus, and of its branches, is quite capable of producing all the various sensations and functional disturbances noted under the head of symptoms. While all cases, to my mind, become explicable by this theory, the hypothesis of duodenal obstruction fails entirely to explain why the same series of phenomena occurs when either the right or the left kidney, or both, become movable. It may be claimed, and with justice, that the left kidney is rarely, if ever, movable alone, and that in this case the movable right kidney produces the symptoms. But Case I., narrated below—the careful perusal of which I would urge in this connection—has the value of a crucial experiment in determining this question, and to me was proof positive that a movable left kidney, the right being securely anchored in its place, is capable of producing exactly the same symptoms as a movable right kidney. Indeed, it was the observation of the progress of this case that led me to abandon the view of duodenal obstruction which I had previously held, and to seek another explanation of the causation of the symptoms of movable kidney. The following quotation is from Gray's *Anatomy*. (The italics are mine.)

“The epigastric or solar plexus supplies all the viscera of the abdominal cavity. It consists of a dense network of nerves and ganglia, situated behind the stomach and in front of the aorta and *crura of the*

diaphragm. It surrounds the celiac axis and root of the superior mesenteric artery, extending downward as low as the pancreas and outward to the supra-renal capsules. This plexus, and the ganglia connected with it, receive the great splanchnic nerve of both sides, part of the lesser splanchnic nerves, and the termination of the right pneumogastric. It distributes filaments, which accompany, under the name of plexuses, all the branches from the front of the abdominal aorta."

This part of the subject would be incomplete without an allusion to the so-called "strangulated movable kidney," as described by Landau and later by Lindner, a typical illustration of which condition I have seen in but two instances. The symptoms then become acute; pain in the right side, vomiting, great restlessness, possibly a little febrile movement, occur; the urine is diminished in quantity. This condition lasts from two to four days, when, with increased secretion of urine, the symptoms rapidly disappear. Landau thinks an obstruction of the renal vein by torsion accounts for the strangulation, while Lindner regards the symptoms as due to temporary obstruction of the ureter, by torsion or kinking, thus producing hydronephrosis.

DIAGNOSIS.—A movable kidney is, in my opinion, the easiest of all intra-abdominal conditions to diagnosticate. The diagnosis is made by the discovery of a movable tumor, of the size, shape, and consistence of the kidney, in the right hypochondriac or lumbar regions, or in the iliac fossa; in fact, by feeling a movable kidney in any other but its normal position. The recognition of a movable kidney is an easy matter, especially for the expert gynecologist whose tactile sense is educated by daily practice. With the patient in the dorsal position, and the thighs flexed to relax the abdominal parietes, the examiner sits at her right side, opposite the loins, and with his left hand passed under the small of her back, presses deeply into the renal region to either crowd the kidney out of its place, or to keep it from slipping unrecognized into its normal position while the examination is being made. The fingers of the right hand palpating the front and side of the abdomen usually recognize the displaced organ without difficulty. When it is detected it should be caught between the fingers of both hands and gently pressed until it escapes alternately upward and downward from between the compressing fingers. The contour of the upper and lower poles and the entire characteristic kidney shape of the tumor are thus recognized without the possibility of mistake. The majority of movable kidneys when thus moderately pressed and handled are not sensitive to pressure; in a minority of cases the patient complains of slight, quite bearable pain. Landau has found that pressure upon a movable kidney causes cardialgia. I have never elicited this symptom, but have often produced a slight nausea on compression of the displaced organ. Perhaps the difference in the sensations of the patient may be due to varying

degrees of pressure employed. The displaced kidney is almost uniformly of about normal size; in but five or six instances have I found it enlarged.

Should there be difficulty in palpating the kidney in the dorsal position, the left lateral decubitus (Sims's position), as recommended by Lindner, may be tried. I have myself never resorted to it. When I have failed, with the patient in the dorsal position, to dislodge a suspected movable kidney from its normal situation by pressure of the left hand applied to the back, I have always succeeded by directing the patient to sit upon the edge of a chair with the body inclined forward and the hands resting upon the knees. In this position I have never experienced difficulty in reaching a diagnosis. By employing this position, or the left lateral decubitus, the necessity of repeated examinations in doubtful cases, insisted upon by many authors, can be avoided.

Very rarely, indeed, should there be difficulty in distinguishing a movable kidney from other tumors of the abdomen, and reference to this part of the subject would scarcely be necessary were it not that errors have been made by the ablest diagnosticians. Thus in the case of Dr. Angus Mac——, already alluded to as reported by Dr. Baker, the patient acquired a movable tumor in the right hypochondrium as a result of prolonged vomiting from sea-sickness. Several clinicians of the highest reputation examined the tumor, and at least two of them pronounced it a movable kidney. The patient finally consulted Lawson Tait, who, ignoring previous opinions, made a diagnosis of distended gall-bladder and performed abdominal section. At the operation (presumably performed in the dorsal position), Tait found the gall-bladder and adjacent structures healthy and the "kidney *in situ*." He afterward said that the tumor was an hysterical tumor. Nephrorrhaphy was subsequently performed by Dr. Baker and the patient relieved of his long suffering.

It will thus be seen that a movable kidney may be mistaken for a distended gall-bladder. Attention to the shape and outlines of the tumor and to the range and direction of mobility should enable us to avoid this error.

The so-called "phantom or hysterical tumor" should never be mistaken for a movable kidney. If the hysterical tumor be due to intestinal distention, percussion will enable us to differentiate. If, as I believe is more frequently the case, the phantom tumor represents a localized spasmodic contraction of the abdominal muscles—most frequently of the recti—the expert fingers of the gynecologist should have no difficulty in detecting the condition. In very exceptional cases examination in narcosis would remove all doubt. I have myself never met with a case in which it was necessary.

A *movable* right kidney should never be mistaken for carcinoma of

the stomach or adjacent viscera, although the symptoms in many cases of movable kidney are similar in many respects to those of malignant disease of the abdominal viscera. A right kidney dislocated downward and *fixed* in its abnormal position—a rare condition, fortunately—may offer difficulties of diagnosis.

The error of confounding the symptoms of a movable kidney and those of a chronic intestinal or gastro-intestinal catarrh can only occur from failure to make a sufficiently painstaking examination, and is inexcusable at the present day.

PROGNOSIS.—A kidney once movable never again becomes *firmly* fastened in its *normal* position, except by operative interference. Its mobility, however, may be diminished by increased deposit of fat around the organ accompanying general improvement in nutrition. The intensity of the symptoms, whatever the latter be, remains about the same until the kidney attains a range of mobility of ten to twelve centimetres. After this range has been attained, and during the further increase in mobility, the symptoms are somewhat mitigated. The patient, however, as already stated, remains more or less a chronic invalid. A movable kidney may, however, become fixed in an *abnormal* position—rarely, I believe, by peritoneal adhesions, but rather by an induration or mild sclerosis of the fatty tissues surrounding it. A floating kidney, on the other hand, being contained in a fold of the peritoneum, may become fixed by agglutination of its peritoneal coat to neighboring peritoneal surfaces. When this occurs the symptoms are likely to become very distressing.

TREATMENT.—The dorsal decubitus will markedly mitigate or entirely remove, while it is maintained, the symptoms of movable kidney. It will, however, not lead to fixation of the kidney, no matter how long maintained, and the symptoms are certain to be reproduced on assuming the erect posture.

I know of one case, greatly benefited, though not cured, by the Weir Mitchell treatment of absolute rest in bed, forced feeding, massage, and electricity. The increased deposit of fat around the kidney probably explains the beneficial results, and the method may be tried in patients who can afford it, and who elect it after the alternatives have been fairly presented to them. Lasting relief can scarcely be expected, unless the obesity produced can be maintained or even increased. This amelioration of symptoms is, as already remarked, occasionally observed to follow improved nutrition without any special medication.

Eisenberg (*Wiener med. Presse*, 1891, No. 36) has reported successful results in the treatment of movable kidney by massage after Brandt's method. Further experience in this direction is needed before we can arrive at definite conclusions.

Abdominal supporters or bandages are relied upon by the majority

of those who recognize in movable kidney a pathological condition requiring treatment. In our resources against the condition it ranks second to nephrorrhaphy; but in my opinion it is a poor second. It will always appeal strongly to minds with anti-surgical bias, and I confess that until I saw my way clear to a more efficient and perfected nephrorrhaphy, with more uniform and lasting results than existing reports supplied, I preferred to relieve my patients as best I could with bandages. Even after I had gained some confidence in my ability to fix a movable kidney by nephrorrhaphy, I still advised the trial of a bandage to obtain relief before resorting to operative measures. Faithfully as I tried bandages, however, I must own that I accomplished little good with them. This might *à priori* be expected, as a movable kidney in the readiest manner escapes from beneath even the compressing hand, probably the most perfect pad as yet devised. Inability to obtain desirable results from the use of the bandage, and the almost absolute certainty of relief by nephrorrhaphy in cases selected after careful study as indicating fixation of the kidney, have led me latterly to urge nephrorrhaphy as the first resort to patients with movable kidneys producing decided symptoms.

A bandage, to be effective in retaining a movable kidney must support all the abdominal viscera and, through them, the displaced organ. The special compress or pad so generally used beneath the bandage over the front of the renal region is a delusion and a snare, the kidney escaping from beneath it with the greatest facility. It is scarcely consistent for one avowing a disbelief in the efficacy of bandages to follow such avowal by an expression of predilection for certain forms of bandages. Whatever little good, however, I have accomplished in this direction has been by a simple bandage of elastic webbing entirely encircling the whole abdomen and making as much compression as the patient can comfortably bear. A well-fitting, rather tight corset answers still better in males, and in women in whom no contra-indication to the wearing of a corset exists on the part of the sexual organs—a condition obtaining only in a minority of the cases I have seen.

Nephrectomy, or removal of the movable kidney, I mention only to condemn. It has no justification in this condition, while nephrorrhaphy, a much less dangerous and mutilating operation, can be made to yield results almost, if not quite, as good and positive.

Lindner, in 1887, collected 36 nephrectomies for wandering kidney, with 9 deaths, a mortality of 25 per cent. Of these 36 kidneys, 9 were removed by the lumbar incision without a death, whereas 25 were extirpated by coeliotomy with 9 deaths. In 2 cases the method of operation is not stated. This appalling mortality, I am inclined to believe, would be lessened by the addition of more recent cases.

Lindner also collected 29 nephrorrhaphies with 1 death. Adding thereto my own 12 cases with 1 death, makes 41 cases with 2 deaths, a

mortality of less than 5 per cent. This mortality rate would also, no doubt, be lessened by the addition of all published cases, of which I can recall quite a number, without remembering having read of an additional death.

(To be continued.)

A QUESTION OF WATER, ETHICS, AND BACTERIA.

BY PROF. ALBERT R. LEEDS, PH.D.,
STEVENS INSTITUTE.

WITH our daily growing knowledge of the etiology of disease, and the discovery of the fact that the water which we daily use in our homes and houses is the most widely diffused and general bacterial culture-fluid, the feeling of responsibility connected with water diagnosis steadily increases. After an experience of twenty years, during which I have reported upon somewhat more than two thousand samples sent from a large proportion of our public supplies, and representing the most diverse kinds of water, I feel a more painful sense of this responsibility, and am at times more embarrassed in arriving at a decision than when I made my first analysis and report. This was upon the waters used by Jersey City, Newark, and Hoboken some twenty years ago.

An interesting experience of this nature has recently befallen me. It involves not only a question of ethics and moral obligations, but also certain doubts as to the practical value of bacteriology in deciding upon the wholesomeness and purity of a water employed for domestic use.

A sample of water was sent by a well-known engineer which had been taken from the well of one of his clients, whose house stands in perhaps the most beautiful of the residence-parks of suburban New York. It had so happened that the water of another well, located in the same park, had been sent just previously, and though affording better analytical data, had been condemned as dangerous and impure. But the water of the particular well I now refer to, for reasons given below, was pronounced safe and wholesome. To put the matter in clearer light, I shall run the risk of making my article somewhat formidable with technical terms and with figures, and shall give in detail the relative composition in parts per 100,000 of the two well-waters:

	Condemned water.	Approved water.
Color	Same	Same
Taste	Pleasant	Sparkling
Smell	None	None
Ammonia	0.006	0.0045
Albuminoid ammonia	0.008	0.0115
Oxidizing oxygen	0.071	0.20

	Condemned water.	Approved water.
Nitrous acid	None	Trace
Nitric acid	1.07	4.008
Chlorine	0.525	0.575
Total hardness	7.65	10.25
Permanent hardness	2.45	6.00
Temporary hardness	5.70	4.25
Total solids	13.10	23.13
Mineral matters	9.10	19.80
Organic and volatile matters	4.00	3.33

Dissolved gases measured at 0° C. and 7.60 mm. pressure :

	Condemned water.	Approved water.
Oxygen	6.15 cub.cent.	6.56 cub.cent.
Carbonic acid	9.47 “	23.53 “
Nitrogen	13.87 “	15.19 “
Total gases	29.59 “	45.28 “
Colonies of bacteria per cub.cent.	Innumerable	1674

The very pleasant taste of both waters, which in the approved arose to a lively sparklingness, like mild mineral water, was due to two causes: in part to the high percentage of salts, but still more to the great amounts of nitrates and of carbonic acid gas. Peculiar interest and significance are connected with the presence of these acid substances in such large quantities on account of the way and manner in which they were originated. Unquestionably they sprang from manure and substances of the nature of sewage which the water took up in its passage through the soil on its way to the well. Nitric acid is derived from sewage by the oxidation of its nitrogen and ammonia. And, lest anyone think there is a blunder in reporting this enormous quantity, amounting to $2\frac{1}{2}$ grains to the gallon, let me say how it was determined. After trying for years the various customary methods of estimating the nitric acid in potable water by means of its reduction to the form of nitrogen and ammonia, by the indigo and other methods, I have given up all these methods, believing them to be untrustworthy. Instead of employing these methods, I reduce the nitric acid to the form of nitric oxide gas, and then measure the latter in a eudiometer. In this instance the nitric oxide obtained from $\frac{1}{2}$ litre of the water, after its volume had been reduced to the normal temperature and pressure of 0° and 7.60 mm., amounted to 8.305 cubic centimetres. In order to prove that this great volume of gas was nitric oxide, and not some nitrogen or other gas resulting from extraneous substances, or some error in the conduct of the experiment, I passed up into the eudiometer a proper amount of oxygen gas. Nitric oxide has the property of combining with oxygen to form a dark-red gas known as nitrous acid. This is a most striking and characteristic phenomenon. On making the test with oxygen, these blood-red fumes appeared. The fumes were entirely absorbed by caustic soda, showing that no other gas than nitric oxide had been originally

present, and all that was present in the eudiometer was derived from the nitric acid of the water. Though almost incredible, there could be no further question of the fact— $2\frac{1}{2}$ grains of nitric acid to the gallon was certainly present in the water.

The carbonic acid came from sub-aërial oxidation of the carbon of organic matters, which, as I have already stated, consisted in this instance almost entirely of manure and sewage. To realize how excessive is the amount, call to mind the fact that the carbonic acid in New York City water varies from 9.50 c.c. in midwinter to 2.5 c.c. in late summer and autumn. Also, that the well-waters in its vicinage, which are ordinarily soft, contain only 3 to 5 c.c. of carbonic acid.

But the feature *sui generis* was the nature and number of the bacteria. In both cases these bacteria belonged to a class which is known as nitrifying ferments. It has been definitely ascertained of late years that the direct oxidation of nitrogen and ammonia to nitric acid very rarely, if ever, occurs in nature. It is necessary to have the aid of minute living organisms, which are known as nitrifying bacteria, to effect this change. They act as ferments, similar to the way in which the yeast plant brings about the conversion of sugar into alcohol and carbonic acid. The absorption of oxygen is an essential and necessary part of the discharge of the vital functions of these nitrifying bacteria. They cause the oxygen to combine with the nitrogen of the ammonia and albuminous substances which are present, these substances disappearing, and their place being taken by nitric acid.

The number of bacteria in the condemned water was greater than I could count on the culture plates. The approved water, on the contrary, exhibited 1674 colonies per c.c. Just here came the rub. Professor Koch has set down 50 bacteria per c.c. as being, in his opinion, the limiting number which should be present in any water that is to be accounted wholesome and potable. As to the extent of his practical familiarity with water-supplies I have no knowledge. Wolfhügel found that the bacteria in the water of the Spree, from which a large part of the water-supply of Berlin is derived, were reduced by filtration from 3000 colonies in a c.c. to an average number of 107 colonies. This is by the use of the gravity filters constructed after the pattern of those commonly used in England. These filters are cleansed by scraping off the deposit of filth which forms on the upper surface of their filter-beds of sand. Their action is very slow. To show how different is their operation from that of the mechanical filters now extensively used in this country, I shall mention a few facts which are not generally known to the medical and engineering professions.

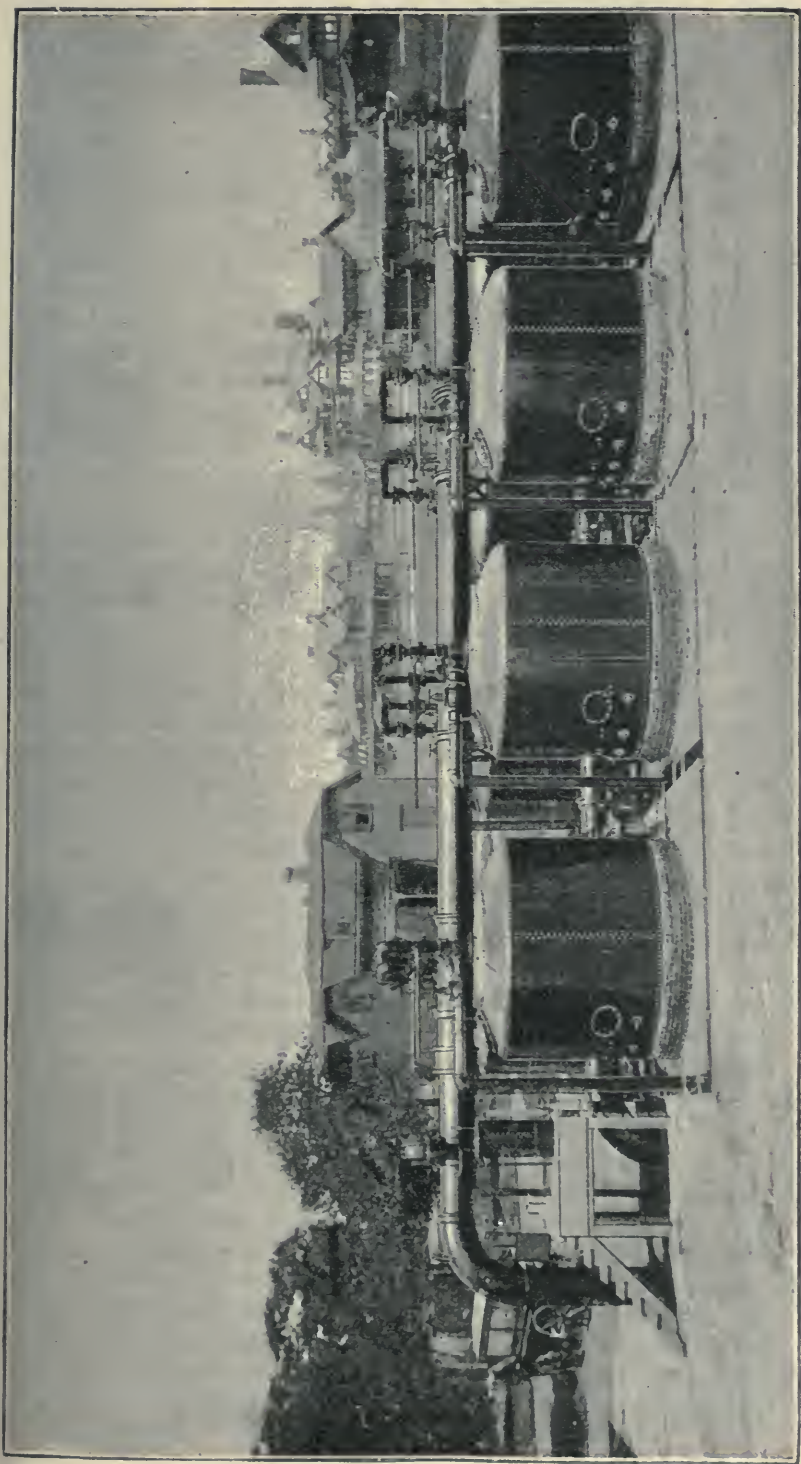
At the present time the only method by which the city of Philadelphia can be supplied with pure water at a moderate and reasonable outlay, is by means of filters erected at the pumping stations on the

Schuylkill and Delaware Rivers. The plans for obtaining a supply from the upper Delaware, from the Tohickon, the Perkiomen, and the upper Lehigh, proceed upon the assumption that these water supplies are necessarily pure and can be kept so. This assumption is utterly false; it is not borne out by the facts. Moreover, the expense of obtaining a supply from these sources, involving, as it does, the claims of certain syndicates which control water rights, and the building of immensely long conduits, would be enormous. In case the city determines to supply filtered water, the New York Filter Company has guaranteed to run a filter plant at the Belmont pumping station with a capacity adequate to filter twenty million gallons of Schuylkill water per diem. Moreover, in case the number of bacteria at any time during the course of trial of a year's duration exceeds 100 per c.c., the company forfeits the payments of the contract price, amounting to nearly a quarter of a million of dollars, and obligates itself to remove the plant without charge of any kind to the city.

As chemist of the Philadelphia Water Department for a number of years, and knowing the effect on the Schuylkill River of the sewage of Manayunk, Conshohocken, Norristown, Phoenixville, and a population of 300,000 people located in the drainage area above these manufacturing towns, I can assure my readers that in guaranteeing to cut down the bacteria to a lesser number than that found by Wolfhügel in the Berlin filtered waters, this company has undertaken to achieve a most important result, and that, too, on a stupendous scale. Dr. Chapin, the health officer of Providence, R. I., has found, however, that this result, and a still more perfect one, is constantly attained in practice. A similar filter plant delivering two million gallons per diem, at Long Branch, N. J., supplies water containing, not 100, but only 2 to 5 colonies of bacteria per c.c. This is by the use of a filter which is washed thoroughly twice in every twenty-four hours. The bacteria, by the use of aluminic sulphate, are entangled in a magma of aluminic hydroxide, and filtered out along with the precipitated coloring matters, clay, etc.

I have analyzed the waters of Long Branch before and after filtration, with the following results, which are stated in parts per 100,000:

	Before filtration.	After filtration.
Free ammonia	0.132	0.0035
Albuminoid ammonia	0.0445	0.0095
Oxygen required to oxidize organic matters	1.232	0.1785
Nitrous acid	0.0025	0.0015
Nitric acid	0.087	0.087
Chlorine	0.35	0.35
Total hardness	2.25	2.25
Permanent hardness	0.00	1.00
Temporary hardness	2.25	1.25
Total solids	9.52	7.14
Mineral matters	5.28	5.40
Organic and volatile matters	4.24	1.74



In other words, the free ammonia was diminished to the one-thirty-third part of its original amount; the albuminoid ammonia to one-fifth, and the oxidizable organic matter to the one-seventh. To bring about this marvellous purification sixty-five one-hundredths of a grain of alum to the gallon was used. The alumina acting as a coagulating material had been so perfectly removed along with the dirt, bacteria, and coloring matter that it was practically absent in the filtered water; if present at all it could only be recognized by the application of the most delicate chemical tests. It is interesting to know what was the original source and nature of the water-supply of Long Branch. It comes from a peat bog located in a cypress swamp about four miles west of that watering-place. It had, on my color scale, July 8, 1892, seven degrees of color, and appeared like an infusion of coffee. And while it had a bitter, peaty taste, the filtered water was perfectly colorless, without odor, and pleasant to the taste.

The almost complete removal of bacteria effected by these filters is in one sense a misfortune. Bacteria are Nature's physicians, constantly busying themselves in seeing that the decomposing and worn-out particles, which would otherwise clog the machinery of Nature, are gotten out of the way and resolved into their simple and harmless elements. They are universally present: in the air, in the earth, and in the waters under the earth. They dwell with the trout in the waters of the purest mountain torrent and are found at the bottom of the coldest and deepest well. As to the moss-grown bucket, the oaken-bound bucket, its moss and oaken chinks and crannies are for bacteria a paradise. Frequently in a sample of milk, when fresh, I have found many hundreds to the teaspoonful, while in the course of a few hours their number has increased to millions. With their aid it is possible to make good cheese, and each one of its peculiar and delicious flavors, from the pianissimo of cottage cheese and Brie, through the crescendo of Stilton, Gorgonzola, and Roquefort, and up to the fortissimo of the indescribable Limburger käse, is due to its particular and peculiar flavor-developing bacteria. The choicest gilt-edged Darlington butter owes its aroma and dainty taste to cream ripened by bacteria under choice and dainty conditions.

The human mouth, stomach, and intestines contain bacteria in immense numbers and variety. Recently I counted the bacteria in my own saliva six hours after eating. There were 10,775 colonies per cubic centimeter. If we assume that a litre is secreted daily and that it contains the same average number, we should have the enormous aggregate of over ten million bacteria. Some of the bacteria of the alimentary tract have a peptonizing action, converting the proteids of the food into peptones; others are diastatic, splitting cane-sugar into dextrose and lævulose. Some have a reducing action, breaking down albumin into the products of fermentation and putrefactive decay, with the evolution of

hydrosulphuric acid, ammonia, etc. These are more especially active and abundant in disordered conditions of digestion. The reducing action of other varieties is exerted upon the fermentable sugars of the food, decomposing them into lactic and carbonic acids. I have never examined the saliva without detecting the presence of nitrous acid due to the reduction of nitrates by the bacteria. At the same time that the counting of the bacteria above alluded to was made, I found my saliva contained 0.4 milligramme of nitrous acid in 100 cubic centimeters. Considering, then, the peptonizing, soluble-making, reducing actions of these alimentary bacteria, is it not eminently probable that they are intimately concerned in, if not essential to, the processes of digestion?

Unfortunately, among the countless multitudes and species of bacteria, which are the gardeners *par excellence* in the garden of Nature, working ever toward making it sweet and pure for man's indwelling, there are some which are too vigorous and hasty in their action for our immediate safety and comfort. These are the pathogenic, the toxic, the morbid genera, which tend to sweep away or extirpate any poorly nurtured, non-resistant, or diseased organism that comes in their way. Yet they are as abnormal, so to speak, as is disease itself. A thousand samples of milk taken at random will probably not show a single pathogenic bacterium. A thousand springs, wells, and watercourses might readily be found in our vicinity of which the same can be said. But inasmuch as the bacillus of typhoid and tuberculosis has been found in diseased cow's milk, the unfortunate recommendation was made to physicians some years since to sterilize all milk by long-continued heating to the boiling-point. The fad quickly became as universal as it was short-lived. It took on its acutest phase some two years ago, but to-day sterilized milk is no longer manufactured for sale in New York. The malnutrition and deaths due to feeding sterilized (*i. e.*, by continued heating to 212° F.) milk to infants have a hundred-fold exceeded in number the cases of tuberculosis, scarlet fever, or other zymotic disease resulting from the bacilli of these diseases in ordinary good country milk. Pasteurized milk, which leaves the constituents of the milk in their natural condition, has taken the place of this tortured, over-cooked milk, in which scarcely a single element is left in its proper and digestible state. While the pasteurization of milk, or its heating for ten to thirty minutes at a temperature of 160° F., does not certainly destroy every germ, it reduces the probability of their presence to a minimum.

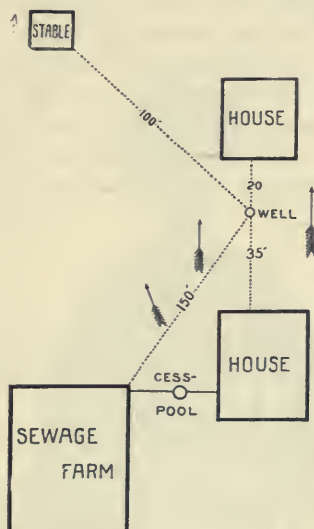
So with regard to water. By long-continued heating it can be rendered absolutely germ-free. The same result can be effected by filtration, provided the filtering medium is fine-grained enough and the rate of filtration is sufficiently slow. But with the materials and the methods essential to an economical supply of the immense quantities of water required by our great cities, no process of filtration ever has made, or

in the nature of things can make, the filtered water absolutely germ-free or sterile. And even if it could, sterilized water is an artificial commodity of very questionable value. Experience has shown that such water, unless carefully kept in reservoirs as far as possible out of contact with light, heat, and air, spoils very rapidly. As soon as the spores, ever floating in the atmosphere, fall into it, they develop in the presence of warmth and sunlight with great rapidity, and the water so fertilized becomes filled with microscopic organisms, algæ, etc. These, in their decay and by the production of foul tastes and odors, render the water unfit for domestic use. The reduction of the bacteria as far as can be practically accomplished by filtration, and not to the point of absolute sterility, is all that is necessary or desirable in an engineering plant designed to supply the water for the multifarious uses of a great city. This, indeed, is the system which has proven eminently satisfactory during the past thirty years for the supply of the five and a half millions of inhabitants of London. This city has 44 subsiding reservoirs, covering an area of 465 acres, and an available capacity of 1,300,000,000 gallons. It has also 100 acres of filters, delivering 160,000,000 gallons daily of filtered water. No epidemic of cholera, such as repeatedly devastated London prior to the installation of its filter system, has occurred since the seven London water-companies were compelled in 1852, by Act of Parliament, to filter their water. In the fifty years prior to the passage of this act there had been four great epidemics, and they had all been traced by such overwhelming evidence to the drinking of unfiltered water that the compulsory installation of the filters had resulted in consequence. To-day the death-rate of London is lower than that of most cities, and the percentage of typhoid fever is correspondingly low.

Having arrived at this conclusion, I wish to return to the question of ethics in relation to the significance of bacteria in water, which was the primary reason that induced me to write this somewhat lengthy article.

What did my duty and a sense of moral obligation to the gentleman who had been at the expense of having his well-water examined require that I should do in face of such chemical and biological data as the analyses revealed? It would not answer to report that the evidence as to purity or the reverse was conflicting in its nature, and as long as there was a doubt prudence demanded that he should not use the well, and that he should seek his supply of water from another source. A physician knows by hard experience that whatever may be his doubts as to the diagnosis, he must prescribe a course of action and treatment. It might be truly answered: Your duty was to confirm your diagnosis by every means in your power. Make culture experiments upon the separate colonies of bacteria until you were absolutely certain whether

any pathogenic forms were present or not. My reply to this would be that such a search is a long, intricate, and difficult investigation, ending finally by establishing the probability of the absence of such forms, and not by arriving at an absolute certainty. Moreover, the expense and labor vastly exceeds the moderate fee which a client is willing to pay for a water analysis, and a charge commensurate for such an exhaustive investigation would be regarded as an extortion. I sent, therefore, for the engineer who had submitted the water, and requested him to acquaint me with the facts in the case and the location of the well in relation to cesspools and other possible sources of pollution. By reference to the accompanying diagram, the facts which he made known will become easily intelligible.



The well is located on the slope of a hill, and 20 feet and 100 feet, respectively, from a house and stable located farther down the slope. Above it are a house and a sub-surface irrigation field at distances of 35 feet and 150 feet, respectively. Between the house and the field is a cess-pool, stated to be cemented perfectly tight, and used to carry the house sewage by an intermittent flushing action upon the small sewage farm. This farm has an area of 100 square feet, with a sub-surface small drain-pipe system, the drains being 4 feet apart, and disposing of 1000 gallons of house sewage daily.

These facts revealed by the engineer were strikingly in accord with the analytical data. By oxidation and nitrification the ammonia and nitrogenous matters in the house excreta were converted in the sewage

farm into immense amounts of nitric and carbonic acids. The work was being very perfectly performed, as was shown by the very small amount of free ammonia and the mere trace of nitrous acid. The presence of so large a number of nitrifying bacteria was simply a guarantee that their work of destroying the dangerous matters in the sewage was being very conscientiously and thoroughly performed. Had they been absent, the original sewage would have appeared in the well. Moreover, it is well established that the bacillus typhosus and other pathogenic germs are themselves the food of the saprophytic varieties.

Having assured myself by these considerations that the water in the well was not dangerous, I drank it myself freely during a period of two weeks, and then gave the owner a certificate, stating that the water had proven safe and wholesome. At the same time I advised the examination during the cold weather to see whether the nitrifying bacteria were certainly doing their work during the winter months as thoroughly as in the warmer seasons of the year. Finally, as the water is not to be reservoired, but used for domestic purposes directly, I shall advise its filtration in order that the bacteria, which may be considered as having performed their work, shall be gotten rid of as far as practicable, on the ground of making assurance doubly sure, and on the ground of their superfluity.

TWO CASES OF AKROMEGALY, WITH REMARKS ON THE PATHOLOGY OF THE AFFECTION.¹

BY F. X. DERCUM, M.D.,

CLINICAL PROFESSOR OF DISEASES OF THE NERVOUS SYSTEM, JEFFERSON MEDICAL COLLEGE.

INASMUCH as the subject of akromegaly is attracting such widespread attention, a report of additional cases, especially if they present unusual features, cannot fail to be of interest; and further, while the disease is rare, it is probably more common, as these cases would seem to show, than is generally supposed. As a rule, only those cases come under observation which apply to physicians for the relief of some painful or distressing symptom. On the other hand, it is extremely probable that others, if not indeed the larger number, pass through life without the knowledge that they are the victims of a mysterious disease, realizing only that Nature has made them big of limb and feature and unpleasant to look upon.

Neither of the cases about to be described presented himself as a patient. Neither had had any occasion for medical advice since child-

¹ Read before the Meeting of the American Neurological Association, New York, June, 1892.

hood. Both were discovered by accident, one on the street, the other in his workshop. Both proved willing subjects for study. It seemed to be a source of satisfaction to them to learn that their peculiar appearance was not a thing normal to them, but the result of a disease, and this may, after all, have been a very natural feeling.

CASE I.—J. T. M., aged fifty-six years; married; a cutler by occupation, and a native of American parentage.

Family history: His father died at sixty-seven years, of heart disease; his mother, at seventy, of some affection which he does not remember. He had in all, five brothers and two sisters. Of these, two brothers died in childhood, while a third appears to be in delicate health. The others, inclusive of the two sisters, appear to be well. He himself has a son of twenty-two and a daughter of thirteen, neither of whom present anything abnormal. He is further very positive in his assertion that no one of his relatives were ever affected as he is, and that they were all people of average size.

FIG. 1.



J. T. M., aged twenty-seven years.

Personal history: As a child he had measles, scarlet fever, and whooping-cough, but since that time he has had no illness of moment. However, he used to take cold rather easily, and has occasionally had rheumatic pains. Nothing further could be elicited until finally he admitted that in former years he had suffered very much from emotional depression. He dated the origin of this trouble from his eighth year, when, upon one occasion, he had been very severely whipped for a fault

of which he had been entirely innocent. He appears to have been an unusually sensitive child, for the unjust punishment to which he had been subjected made, in spite of all attempts at reparation by his parents, an indelible impression upon him. To use his own words, he "fell into darkness and worry," and as he grew older "the darkness and worry grew with him." When twelve to fifteen years of age his depression deepened at times so much as to resemble melancholia. He used to be "so sad and heavy-hearted" that he could not sleep, and lay awake at night "worrying about things that he ought not to have done." This mental state persisted off and on, though in a lessened degree, throughout youth and adult life, up to some fifteen years ago. Since then he has felt quite at ease and even cheerful.

FIG. 2.



J. T. M., aged fifty-six years.

When a young man he appears to have been quite slender and slight in build, as the accompanying photograph (Fig. 1), taken when he was twenty-seven years of age, seems to show. He did not notice any marked increase of any part of his body until about middle age. Indeed, the onset of his symptoms was so gradual that he cannot fix the time when it began, but he remembers very distinctly that it was only ten or twelve years ago that he realized that the size of his hands was very great. Since that time they have continued to grow larger. He has suffered neither from alcoholism nor syphilis.

Present condition: As seen by the accompanying photograph (Fig. 2), the face and hands are excessively large. In the face the features show marked increase in size as compared with Fig. 1. The supra-orbital ridges, the nose, the malar bones, the chin, and even the ears are striking evidences of this. The mouth, too, looks like an enormous transverse slit, while the tongue when protruded is so large that when thrust downward the patient can almost cover with it the hypertrophied chin, and when thrust upward fully the lower third of the nose. An examination of the mouth reveals that he has lost many of his teeth, and further, that the lower jaw projects far in advance of the upper. The face and mucous membranes are rather pale.

The hands are excessively broad and flat, and the fingers look blunt and stumpy, while the natural furrows of the parts are much exaggerated. The nails are broad, flat, and short, and broken off at the ends as though brittle. They also present in varying degree a fine longitudinal striation. The wrists do not seem to be enlarged in proportion to the hands. The feet, however, show an increase in size corresponding to that of the hands. They are also excessively broad and flat, while the nails are similar to those of the hands in appearance.

The following measurements were made:

	Right. Inches.	Left. Inches.
Length of hand from wrist to tip of middle finger	8½	8½
Circumference of hand at knuckles	10	10¼
“ metacarpus, including thumb	12	11¾
“ forefinger, proximal phalanx	3½	3½
“ wrist	8½	8½
“ forearm, junction of upper and mid- dle third	11¾	12
“ arm	13½	13¾
Length of foot, heel to tip of great toe	11½	11½
Circumference of foot at ball of great toe	11	10¾
“ “ instep	11¾	10½
“ “ across instep and heel	14¾	15¼
“ ankle	9¼	9½
“ leg, junction of middle and upper third	15½	15½
“ thigh, junction of middle and upper third	22¾	22¾
		Inches.
Length of nose, root to tip		2¾
From zygoma to zygoma		5
Depth of chin		2½
Circumference of neck		15½
“ chest, at nipples, expiration		43½
“ “ inspiration		45
“ abdomen		44

From these measurements it is evident that the face, hands, and feet are decidedly enlarged. As regards the arms and legs, the figures do not permit us to predicate any increase in size. It is very probable, however, that as regards the chest some increase has taken place. This is evidenced, not so much by the figures, as by the appearance of the costal cartilages and sternum, which are much hypertrophied.

As regards the length of the feet, which is excessive, it should be stated that it is mainly due to a marked increase in the tissue over the

calcaneum, if not indeed to an increase of the calcaneum itself. The appearance is very striking, and is more marked than in the heel of the negro, which it forcibly recalls.

In addition, the thyroid gland is much enlarged, as are also both testes, especially the right, which is enormous, and recalls the corresponding organ in the sheep. The penis does not seem to have shared in the increase.

Dulness over and adjacent to the sternum, such as has been noted by Erb, and which is supposed to be indicative of persistence and enlargement of the thymus gland, was not present.

The patient suffers from general weakness. He is easily fatigued. There is, however, nowhere any local palsy, nor is there anywhere any loss or modification of cutaneous sensibility. The grip is diminished and the knee-jerks are sluggish and lessened.

Stoops slightly, but there is no kyphosis.

Examination of the eyes is negative, with the exception that in the left eye the field is somewhat contracted in its temporal half. Smell is decidedly obtunded. Taste is apparently well preserved. Hearing appears to be normal.

The urine has a specific gravity of 1026, and is negative to all tests.

When questioned, the patient states that he rarely has headache; that he has an excessive appetite, and that he frequently eats "more than is good for him"; also that he is always thirsty, that he drinks about a quart of water with each meal, and a great deal between; further, that he is very apt to fall asleep in the daytime, especially if he sits down, and that he will even fall asleep while people are talking to him. Thinks that his memory is impaired.

Further, he sweats a great deal, especially about the head and neck. He has but one symptom, however, which distresses him, and that is, that whenever he exerts himself a little his heart palpitates.

Sexual power is also much diminished, though in estimating the value of this symptom the patient's age must be taken into account.

CASE II.—G. W. S., aged thirty-six years; married; an employé of the fire department; American.

Family history: This is practically negative. His father was killed by an accident when forty years of age. His mother is living and well. Has one brother and one sister, both of whom are also well. All his people, he states, were of average build, though his mother and an aunt on the mother's side incline to obesity. He has a son of thirteen who is in every way normal.

Personal history: He had none of the illnesses of childhood, but when two and a half years old lost the sight of his left eye by a fall from a sled. His mother states that he had a convulsion as a result of this fall and that he was ill for some weeks. However, he made a good recovery and has had no illness of moment since that time.

According to a photograph taken when the patient was twenty-one years of age (see Fig. 3), he seems to have been a tall young man with perhaps ordinary features. The chin, however, seems already a trifle pronounced. The hands too, though large, are not markedly so, while the fingers are long and even slender. The patient himself thinks that it was at this age or shortly after that he first noticed that his hands were getting bigger. Later on he began to get larger in face, hands, feet, and body—he seemed, as he expressed it, to get bigger all over.

The process must, however, have been very gradual, for a photograph taken when he was twenty-eight, shows less change than might have been expected. However, the nose and chin had already become very large and very pronounced. The cheek bones too, from having been rather flat, had become more prominent.

The patient stated that he had increased steadily in weight, and that when thirty years of age he weighed two hundred pounds.

No alcoholic or venereal history.

Present condition: His features are so very large as to attract immediate attention, while his hands and feet are truly enormous. On strip-

FIG. 3.



G. W. S., aged twenty-one years.

ping him we find that this enlargement is not by any means limited to these parts, but is shared by the body as a whole.

Studying his face (see Fig. 4), we find that his supra-orbital regions are occupied by huge, bony prominences; that the cheek bones are so excessively hypertrophied as to give a knobbed and angular appearance to the cheek; that the lower jaw is positively massive; and that the nose, though well-shaped, is very large. Due to the elongation of the face and the excessive prominence of the malar bones, deep depressions have formed to either side of the nose, and these, together with the distorted features, give the countenance an almost hideous aspect.

The tongue is much hypertrophied. The lower jaw projects far beyond the upper, so that the teeth do not meet. Some of the molars have been lost.

The ears also are very large.

On looking at the back of the head we find that the external occipital

protuberance, theinion, has become so hypertrophied that it forms a massive conical projection more than an inch above the general surface of the skull. The face and mucous membranes are perhaps a trifle pale, but less so than in Case I.

Turning our attention now to the hands, we find that they are excessively broad, thick, and spade-like, while the fingers seem rounded and stumpy. As in Case I., the normal transverse furrows are much exaggerated. The nails also are broad, flat, and striated. The feet closely resemble the hands in the essential features.

FIG. 4.



G. W. S., aged thirty-six years.

Unlike Case I., the hypertrophy is not limited to the extremities, but affects apparently the limbs and trunk in their entirety. A glance at Fig. 4 reveals undoubted hypertrophy of the arms and chest, and this is also true of the lower portion of the trunk and legs. The increase in size appears to affect bone and muscle alike. The hypertrophy of the muscles is, indeed, very striking. The muscles, however, seem soft rather than firm, and although the patient asserts that he is very strong, the dynamometer registers but 72 in the right hand and 74 in the left.

The following are the measurements that were taken :

	Right. Inches.	Left. Inches.
Length of hand	8 $\frac{1}{4}$	8 $\frac{1}{4}$
Circumference of hand at knuckles	10 $\frac{1}{4}$	10 $\frac{1}{2}$
“ metacarpus with thumb	13	13
“ forefinger, proximal phalanx	4	4
“ wrist	8 $\frac{3}{4}$	8 $\frac{3}{4}$
“ forearm at junction of upper and middle third	13 $\frac{3}{8}$	13 $\frac{1}{2}$
“ arm	15	15 $\frac{1}{8}$
Length of foot, heel to tip of great toe	11	10 $\frac{3}{4}$
Circumference of foot at ball of great toe	11 $\frac{1}{4}$	11 $\frac{3}{4}$
“ foot at instep	12 $\frac{1}{4}$	12 $\frac{1}{2}$
“ foot across instep and heel	15	15
“ ankle	10	10
“ leg at junction of upper and middle third	17 $\frac{1}{4}$	17 $\frac{1}{8}$
“ thigh at junction of upper and mid- dle third	23	23 $\frac{1}{8}$
		Inches.
Length of nose (root to tip)		2 $\frac{3}{4}$
From zygoma to zygoma		5 $\frac{1}{2}$
Depth of chin		2 $\frac{1}{2}$
Circumference of neck		17
Distance between acromions measured over back		17
Circumference of chest, at nipples, expiration		44
“ “ “ inspiration		47 $\frac{1}{2}$
“ “ “ at xyphoid cartilage, expiration		43 $\frac{1}{2}$
“ “ “ “ inspiration		47 $\frac{1}{2}$
“ abdomen		41 $\frac{1}{2}$

A comparison of these figures with those of Case I. reveals a notable difference as regards the forearms and legs. These are much larger in Case II. As regards the foot, the same holds good as in Case I. There is a similar formation of tissue at the back of the calcaneum and the same appearance of a negro's heel. It is, however, less pronounced than in Case I.

There is present here no sense of general weakness. Indeed, the patient, deceived by his hypertrophied muscles, believes himself to be very strong. As in Case I., there is no alteration in cutaneous sensibility. The knee-jerks are decidedly minus.

An examination of the eyes by Dr. de Schweinitz revealed the left eye to be sightless, vision having been destroyed by ophthalmia in childhood. The field of vision of the right eye, both for form and color, is exactly normal, presenting the full physiological limits. With the exception of some anæmia of the nerve-head, which is probably dependent upon some general anæmia, examination of the right eye is negative.

The other special senses likewise present nothing abnormal.

The urine has a specific gravity of 1020, and, as in Case I., is negative to all tests.

The patient never suffers from headache. Occasionally, however, has some tinnitus, but which is present only at times. No mental depression or other mental symptoms. Sleeps, however, a great deal. Is very often drowsy during the day. Sweats excessively, especially about the head. Appetite and thirst both very great. Is sexually inactive; not living with his wife.

Weight at present two hundred and fifty-five pounds. Very little of this weight is made up of fatty tissue.

There is no kyphosis.

The above cases are interesting because of the manner in which they were found, and because of the absence of headache and of decided eye-symptoms. Regarding headache, upon which Souza-Leite lays so much stress, I find it mentioned in only a limited number of cases, certainly not in all. The general invasion of the limbs and trunk by the hypertrophy in Case II. must also be looked upon as significant.

In the study of any obscure disease there is always danger of ascribing to facts which bear the relation of mere concomitance, a relation of cause and effect. Pierre Marie, to whom belongs the great credit of having isolated akromegaly and of having defined its position as a clinical entity, has advanced the view that the affection is due to disease of the pituitary body, just as myxœdema is due to disease of the thyroid gland. It is true that he has not presented this view as though absolutely established by the evidence, but rather as a very probable hypothesis. I believe, however, that the facts at hand are more in favor of its rejection than of its acceptance. It is undoubtedly true that in the larger number of autopsies thus far held the pituitary body has been found enlarged, but if such enlargement really be the cause of akromegaly, it should be found in every instance—it should be universal. In a number of cases, however, it has not been recorded, and in several in which it has been carefully looked for, notably the case of Virchow,¹ the pituitary body has been found absolutely normal. Again, observations are not wanting to prove that the pituitary body may be enlarged without the concomitance of akromegaly, as, for instance, in the case recently reported by Packard.² Further, it appears that the pituitary body may be absolutely destroyed and yet no symptoms of akromegaly appear. Weir Mitchell³ some years since reported a very remarkable case (in which I myself studied the specimens) in which an aneurism had formed in an anomalous branch of the circle of Willis. In addition to destroying the optic chiasm it had hollowed out the entire cavity of the sella Turcica, eroding its surface and boundaries. From the notes of the autopsy the aneurism occupied the cavity of the sella Turcica to the exclusion of everything else. Here, then, we have an instance in which Nature has performed a vivisection experiment, and has destroyed the pituitary body without producing the symptoms of akro-

¹ Virchow, *Berliner klin. Wochenschrift*, 1889, xxvi. p. 81.

² F. A. Packard: *THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, June, 1892, p. 657, third case.

³ S. Weir Mitchell: *Journal of Nervous and Mental Diseases*, January, 1889. "Aneurism of an Anomalous Artery causing Antero-posterior Division of the Chiasm of the Optic Nerves and producing Bitemporal Hemianopsia."

megaly. Had they been present it is safe to assume, from the reputation of the observer, that they would have been recorded.

When we consider the clinical records and autopsies of akromegaly still further, we find that there is hardly a gland in the body which has not at some time or other been reported as enlarged: the pituitary body, the thyroid gland, the thymus, the lymphatic glands, the spleen, the kidneys, the lobes of the liver, and the testicles. Certainly with these facts before us we should hesitate to ascribe the affection to disease of any one of them, even if, as in the case of the pituitary body, its hypertrophy is quite frequent. It would be safer to ascribe to the hypertrophy of this body merely the same value as that which must be assigned to the hypertrophy of the other glands, namely, a participation in some obscure and general morbid process. Finally, when we recall such post-mortem findings as hypertrophy of the sympathetic system and peri- and endo-neuritis, a legitimate doubt is raised as to any active part whatever being played by the glandular apparatus.

FIXATION AFTER EXCISION OF THE KNEE.

BY H. AUGUSTUS WILSON, M.D.,

PROFESSOR OF GENERAL AND ORTHOPÆDIC SURGERY IN THE PHILADELPHIA POLYCLINIC;
CLINICAL PROFESSOR OF ORTHOPÆDIC SURGERY IN THE JEFFERSON MEDICAL
COLLEGE; CONSULTING ORTHOPÆDIST TO THE PHILADELPHIA LYING-IN
CHARITY, AND TO THE KENSINGTON HOSPITAL FOR WOMEN.

A PATIENT with tubercular osteitis of condyles of the right femur, with sinuses extending up the thigh, posterior displacement of tibia, and flexion, was confined in bed for a year. Excision of the necrosed condyles and of the sinuses leading thereto was performed, with removal of about one and one-half inches of femur and tibia. Three strong chromicized catgut sutures were employed to maintain an accurate coaptation, and a plaster-of-Paris splint, embracing entire leg, foot, thigh, and pelvis, was kept on for five weeks. When the fixed apparatus was removed the leg was perfectly straight, the wounds all perfectly healed, and there was apparently firm bony union. The patient was permitted to get up and go about on crutches without use of the affected leg, upon which a light rigid posterior apparatus of plaster-of-Paris was applied. Three months after the operation, the appearance of the knee being unchanged, she passed from my observation as cured, with firm bony union in a straight position. A year later I again saw the patient and learned that shortly after my last visit, *i. e.*, five months after the excision, she had commenced to gradually use her right leg in walking with her crutches, and about four weeks later, or six months after operation, had discontinued the use of crutches altogether, all of which was contrary to my instructions. Upon examination, I found that the tibia had become displaced posteriorly, as shown in Fig. 1, and decided eversion of the foot

and leg had taken place by rotation of the tibia, as shown in Fig. 2, but there was no flexion. The shortening was two inches. The patient declined further operative procedure in the hope that some form of mechanical apparatus would enable her to walk without fear of increasing deformity. Just here it will be of value to give brief notes of four cases that have direct bearing upon the one just read in showing the time at which patients have been able to walk.

FIG. 1.



FIG. 2.



Swain speaks of a case of excision that ten months after operation sustained a fracture of femur two inches above excised knee. (Swain: *Diseases and Injuries of Knee-joint*, p. 102.)

Ashhurst, in *Encyclopædia of Surgery*, speaks of a case, aged eighteen years, who walked with crutches one year after operation without any support to resected limb. There was still slight flexion and extension at knee, but no lateral motion. Patient fell and fractured fibula of resected leg without injury to knee. Two months later, walked with a single crutch. One month more, walked readily with cane and sometimes not that support.

Ashhurst also refers to a case in which two weeks after operation bony union had begun. In two months, splint was replaced by a pasteboard gutter and patient was allowed to sit up. Five months after the operation the patient walked unaided, supported by soap plaster and bandage. And another, who five months after operation, walked without crutch, cane, or assistance. There was firm union at a slight angle.

Upon looking up the subject in text-books on surgery, I found great diversity of opinion as to the necessity for the use of internal fixation,

the method of operating, the kind of external appliance to be used, and the length of time in which immobility should be maintained. The Jacksonian prize essay on "Injuries and Diseases of the Knee-joint," by William Paul Swain, published in 1869, gives in an appendix the brief notes of one hundred and four cases of excision of the knee for various conditions and by various operators. They were all treated without internal fixation, dependence being placed upon external fixation by an apparatus something like the Thomas splint. The notes do not always accurately state the ultimate position of the leg, but apparently have reference more to the comparative mortality of excision and amputation. The following table was extracted therefrom in the effort to show the results obtained by the use only of external methods of fixation, which were employed for periods generally of two, three, four, and eight months after operation.

	Cases.
Firm straight union was obtained in	21
Fibrous or cartilaginous union	6
Serviceable limb	5
Good union	14
Fair amount of union	1
Subsequent flexion occurred in	4
Posterior displacement of tibia	2
Ultimate position or condition of leg not definitely stated	15
No union	9
Death not always associated with operation	19
Reëxcision on account of flexion	4
Reëxcision for return of disease	3
Amputation on account of there being no union	3
Amputation for return of disease	5

A more or less serviceable leg was obtained in 37 cases out of 104.

J. D. Bryant reports 10 cases in which good bony union was obtained in 1 case in two months; 2 cases in three months; 2 cases in four months; 1 case in seven months; slight flexion was present after four months in 2 cases; slight motion existed three months after operation in 1 case; 1 case died of Bright's disease on thirteenth day. (J. D. Bryant: *Trans. Am. Ortho. Assoc.*, 1891, p. 314.)

Hoffa found 14 cases of slight flexion and 30 cases of severe flexion in a total of 130 cases of excision of the knee. (*Arch. f. klin. Chir.*, 1885, iv. 32.)

Dr. Phelps reports 8 cases in which the results are here given: One case was wired, but flexor tendons were not cut; result, leg flexed. One case, reëxcision of the above; result, firm straight leg. One case cut hamstring tendons; result, firm straight. One case, four months after, firm straight. One case, nailed and wired, cut hamstrings; result, firm straight. One case, nailed and wired, cut hamstrings; result, firm

straight in seven weeks. One death from ether. (A. M. Phelps: *Med. Record*, July 31, 1886.)

In 36 cases collected from various sources by Dr. A. M. Phelps (*Med. Record*, July 31, 1886), the results were as follows: Bony union seven weeks later, 1; bony union where the treatment was continued for 180 days, 1; fibrous union eight weeks after operation, 1; good, 2; good one year later, 1; firm union, 1; patient walked six miles, not stated how soon after operation, 1; useful limb, 5; cured, 1; walked well three months later, 1; one year later firm union, walked with ease, sixteen months after excision flexion to right angle (Morgan: *Brit. Med. Journ.*, July, 1879, p. 317); indefinite, 4; not stated, 4; recurrence, 1; no union, amputation, 1; subsequent relapse, amputation, 2; amputation, abscess cavity, 1; amputation for condition not stated, 1; no union, 4; death, tubercular meningitis, 1; death, shock, 1.

Roberts (*Modern Surgery*, p. 524) says: "Patients can walk in eight to ten weeks. No brace is required unless bony ankylosis does not occur." The difficulty of being sure that bony ankylosis has been obtained is so great that it would appear to be advisable to obtain, if possible, a greater assurance that the case will not relapse.

Note Morgan's case (*Brit. Med. Journ.*, July, 1879, p. 317) where, one year after excision the union was firm and the patient walked with ease, but four months later the leg became flexed to a right angle.

J. C. Schapps (*Brooklyn Med. Journ.*, July, 1892, vol. vi. p. 65) reports a case in which Wyeth's drills were used and a posterior steel splint. Splint was removed at end of four weeks. Two to three weeks later union was apparently firm. Eighteen months after the operation the limb was very much flexed, but there was no motion. Osteoclasis was done and plaster-of-Paris splint used for ten months. Thirteen months after osteoclasis and two and a half years after excision, patient was doing well.

Another case of a boy that left the hospital four months after excision, through error discontinued use of splint. Sixteen months after excision, leg was flexed a great deal. Osteoclasis and plaster-of-Paris were resorted to. Seven and one-half months after osteoclasis, or one and one-half years after excision, the leg was again flexed as greatly as before. Steel brace applied for eight months. Two years after excision the limb was reported firm, with flexion. (J. C. Schapps: *Brooklyn Med. Journ.*, July, 1892, vol. vi. p. 65.)

Gerster (*Gerster, Surgery*, ed. 1888, p. 287) records a case in which two nails were used, which were withdrawn on the twelfth day. Eight months after the operation the patient is said to have recovered.

Ashhurst (*Encyclopædia of Surgery*) records a case in which there was firm union nine and one-half months after excision. Two weeks later, with a splint on, walked readily with crutches. Two and one-half months

later both splint and crutches were dispensed with. Seven years later, or eight years after excision, the limb was contracted at a right angle and immovable. The contraction had been coming on for two years.

Moullin says: "Union is fairly sound in a successful case at the end of six weeks, and the patient may then be allowed to get about on crutches, the limb being protected with a poroplastic casing or with Thomas's knee-splint. Some appliance of this kind must be worn for several years; in the case of children until the period of youth has ceased." (Moullin: *Treatise on Surgery*, p. 595.)

Later, even after years have passed, the osseous union sometimes yields and causes serious deformity. (Moullin, p. 595.)

Treves says: "The after-treatment is of the most importance, is tedious, and often surrounded with difficulties. There is a tendency to displacement, and notably to a displacement of the tibia backward." (Treves: *Manual of Operative Surgery*, vol. i. p. 692.)

"The limb must be kept upon the splint until it is sound. This period will vary from six weeks to three months. Complete recovery can usually not be expected until six months have elapsed." (Treves, p. 693.)

After the splint has been removed, a light leather support, strengthened with a strip of steel at the back, should be applied; and in the case of children, Mr. Jacobson advises that such a support be worn for three or more years. (Treves, p. 693.)

Erichsen says: "The result of the operation will mainly depend on the care taken in the after-treatment." (Erichsen's *Surgery*, vol. ii. p. 270.)

Swain remarks: "Throughout, one great object must be kept steadily in view, viz., *the perfect immobility of the limb*. At the end of one month to six weeks, retentive apparatus should be removed, and the limb placed in some other support."

The results obtained by the employment of external methods of fixation, as given in Swain's table of 104 cases, would appear to clearly indicate the necessity for the employment of internal fixation, in connection with efficient splints, that perfect coaptation may be obtained and maintained with less dependence upon the volition of the patient. The problem is, therefore: Which of the many methods employed offers the greatest assurance of permanent coaptation and prevention of relapse?

There is abundant evidence that in many cases, notably those in which there was tubercular osteitis, primary bony union is rarely obtained until after months or years have elapsed, and often when it has apparently been accomplished, it yields, resulting in subsequent deformity. This would clearly indicate that temporary methods of fixation are inadequate and tend to the abandonment of catgut, or even chromicized catgut, which can exert restraining force for a comparatively short time only. Steel nails are of doubtful efficiency because of the short time in

which they are employed. They are usually removed at, or about, the fourth week, and are generally found to be loose and therefore easily removed. These facts show that they could not have exerted any force. The same statement would apply to screws, gimlets, drills, dowels, or other methods which were removed during the course of the first treatment.

Gerster (*Surgery*, ed. 1888, p. 287) reports a case where five nails were used. On the third day the dressings were changed, and four nails were found to be loose and were therefore withdrawn. Two and one-half months later the last nail was withdrawn. Four months after the operation, patient walked without crutches or stick, but used a silicate of soda splint. The union was not perfect.

In four cases in which I have used steel nails, three inches long, I have found that there was absolutely no resistance to their easy removal, and that they were simply loosely imbedded, principally in the cancellous structure. In experiments upon a cadaver I found that nails, screws, or dowels did not prevent motion, but upon lifting the leg by the thigh the weight of the leg produced a great separation. Rotation of the leg broke loose the attempted fixation, and they appeared to be perfectly useless without efficient external support, and the employment of the latter only, appeared to be just as efficacious. In the same cadaver I employed stout wire at four points, through holes drilled in the compact structure, and found that the objectionable movements were entirely absent, although great force was exerted.

If the wire suture is efficiently used, it would appear to be the method promising the best ultimate results, but its success depends upon its long-continued use. I cannot agree with Treves, that primary union is apt to be hindered by the use of metallic sutures, and that their presence excites carious action. I have seen cases where the wire sutures were *in situ* two years after an excision, and Bryant (*THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, 1892, vol. ciii. p. 116) says that he has not removed the wires in any case, unless trouble was caused by them, and this rarely occurred.

The accurate approximation of the tibia and femur, secured by metallic sutures, naturally permits of less dependence being placed upon the external fixation apparatus, but should not tend to its disuse.

Methods of operating with the view of more accurate fixation are numerous, and those most in use are Volkmann's, Fenwick's, and Neuber's. The patella plays an important part in Volkmann's and Neuber's methods, by its union to the tibia and femur acting like a splice, and where the patella is sound, its use is of advantage. Fenwick's method of dovetailing the femur and tibia by curvilinear incisions is more difficult of execution than straight incisions, and has a tendency to leave pockets between the sawed surfaces. It affords an effectual bar against

either rotation or posterior displacement of the tibia, but will not prevent flexion. Phelps resorts to Fenwick's method, supplemented by section of flexor muscles, and his table of eight cases already quoted shows recovery with firm straight legs, but I have not been able to learn as to the length of time after operation that the cases were recorded.

The use of the patella is urged and discouraged by equally good authorities.

Treves says: "With regard to the patella, no good can result from its retention. If partially diseased, and the morbid parts be removed, there is still a fear of the mischief reappearing and extending. If apparently sound at the time of the operation, it may, if left, become attacked by destructive inflammation during the healing process.

"The retention of the bone and of the patellar ligament does not assist in retaining the femur and tibia in position, inasmuch as the ligament becomes loose and relaxed when the limb is adjusted upon the splint.

"Since firm ankylosis is aimed at after the operation, the quadriceps muscle is of little value, and it has not been shown that the retention of the patella has increased the usefulness of the limb."

Golding Bird preserved the patella, but saved it through transversely to reach the joint, and after the excision, united the two fragments of the bone with sutures.

Experience with traumatic transverse fractures of the patella has not shown subsequent bony union in a sufficient number of cases to give confidence as to its being of great use after division in the operation of excision of the knee.

Reidinger, like Neuber, would saw off the posterior surface of the patella, freshen the corresponding surfaces of the femur and tibia, and hold in contact by two steel nails driven straight in through the patella, one going into the femur and the other into the tibia. (*Centralbl. f. Chir.*, 1887, p. 440.)

Swain says that he has frequently seen severe spasm of the muscles of the thigh pull the femur up and render the adjustment of the limb most difficult; this seems to indicate that in transverse section of the patella there would be great difficulty in holding it in place, and this would complicate the operation upon the tibia and femur.

To avoid the disadvantages of transverse incisions through the patella, the longitudinal section was resorted to in order to have the unbroken restraining force of the patella and its attachment to the tibia to prevent flexion.

Treves says: "The method by a longitudinal incision is difficult and tedious; a small space is provided, a good view of the interior of the joint cannot be obtained, the removal of all the diseased tissue is less

surely effected, and good drainage cannot be provided for unless a special drainage incision be made."

From what has already been said about the doubtful efficiency of the patella, the longitudinal incision offers no advantages over other methods. The supposed action of the flexor muscles in the production of flexion or posterior displacement of the tibia has led to their division as a part of the operation of excision. It is still a matter of dispute as to whether posterior displacement of the tibia is produced by the action of the flexor muscles, or whether it is an anterior displacement of the femur produced by the action of the extensor muscles of the thigh. I am inclined to the view that the latter is the predominant factor, depending upon the efficiency of the splint.

Erichsen has never found it necessary to divide hamstring tendons, and believes it complicates the operation. (Erichsen's *Surgery*, vol. ii. p. 270.)

Swain (*Injuries and Diseases of the Knee-joint*, 1869, p. 76) directs attention to the fact that the simple division of tendons in contracted knee-joints, where the tibia is dislocated backward, is sometimes of little use, as the contraction is found more in the fascia and deep tissue in contact with the posterior capsule than in the tendons themselves.

Gross says: "One of the most annoying occurrences to be guarded against is the tendency which the tibia has to be drawn outward and backward by the action of the flexor muscles of the thigh," and recommends subcutaneous section of tendons of the offending muscles. (Gross: *System of Surgery*, ed. 1872, vol. ii. p. 1099.)

Phelps, already quoted, regards the division of the hamstring tendons as an essential feature of the operation of excision.

The restraint afforded by the posterior ligament of the knee-joint is, I believe, of doubtful value from its naturally relaxed condition after the excision of the bones, to the amount of one to two or more inches.

Treves believes that in the majority of instances it is possible to leave the posterior ligament undisturbed. (Treves, p. 687.) And Moullin says that if the posterior ligament has been preserved, the bones are fairly secured without anything else. (Moullin, p. 594.)

In all of the operative procedures more or less reliance is placed upon the splint, according to the operator's views of the efficiency of the methods employed for securing internal fixation. The character of the external support is also directed from the same standpoint, and the forms of splints are more numerous than the methods of operating and producing internal fixation.

Heath recommends "a simple straight splint, reaching from the foot to the back of the thigh, with a foot-piece, which is all that is necessary for the treatment, and may be either iron or wood." (Heath: *Minor Surgery and Bandaging*, p. 265.)

Treves says: "Such a splint should be provided as will allow the bones to be kept in good position, will permit of free inspection and examination of the wound, and will not interfere with dressing and drainage." (Treves, p. 692.)

Bradford and Lovett recommend a perineal crutch (in the form of a Thomas splint), which shall prevent bearing any weight on the leg until several months after the operation. (*Orthopædic Surgery*, p. 394.)

"In general, however, plaster-of-Paris forms the most satisfactory splint put on over a heavy antiseptic dressing." (Bradford and Lovett: *Orthopædic Surgery*, p. 393.)

Moullin speaks of the necessity of having the splint arranged so as to have the limb entirely out of the patient's control. (Moullin's *Surgery*, ed. 1891, p. 595.)

This would appear to be the clearest description that could be given for a splint, no matter of what material it should be constructed. I have seen splints in use that appeared to be all that could be desired, but upon further inspection it was found that the patient could readily move the femur in almost any direction. While this motion was limited, it was sufficient to retard the union or to produce some of the displacement referred to in cases where firm approximation was not obtained by internal fixation. In an adult it might possibly be safe to depend upon the patient to keep the leg still during the daytime, but irreparable damage could occur at night.

It is clearly apparent that the length of time the splint is used is of great importance, and yet upon this subject writers vary greatly.

The *American Text-book of Surgery* (p. 1134) recommends that "immobilization should be maintained for two, or, better, three months, and a posterior splint should be worn for many months longer."

Erichsen says: "If a useful limb can be preserved to the patient, it can matter but little if a few additional weeks be devoted to the procedure by which it is obtained." (Erichsen, vol. ii. p. 271.)

Treves urges that "The after-treatment is, on the whole, of more importance than the operation itself." (Treves, p. 681.) And this I have found warranted by a review of the cases already given, and as well in 10 cases operated upon by others that I have seen years after the excision was performed. In 5 cases there was a resulting flexion; in 3 there was posterior displacement of the tibia; in 2 there was marked rotation of the tibia. In all of these patients there was, six months after the operation, perfectly straight legs, and the union firm enough to bear the weight of the body.

In 2 cases the deformity began at seven months after excision; in 3 cases the deformity began at one year; in 2 cases the deformity began at one and a half years; in 1 case the deformity began at two years;

in 1 case the deformity began at two years and three months; in 1 case the deformity began at three years.

It was impossible to obtain more definite information from these patients, but I have reason to believe that their statements are accurate.

As the knee is stiff, or designed to be, there can be but little objection to the prolonged use of a steel apparatus that would weigh, say five or six pounds at the most. The slight annoyance from the use of such a brace would be more than compensated for by the assurance of having a permanently straight and useful leg. Its use would act as an indicator of any yielding of the knee, and would direct attention to the necessity of avoiding its use in walking, or to its being given still greater support.

CONCLUSIONS.—The following statements appear to be warranted:

That metallic bone-sutures will secure the most efficient internal approximation.

That they should never be removed unless some serious conditions demand it.

That the entire leg should be kept free from the patient's control by external splint for from four to six weeks.

That the most important element in the treatment is the prolonged use of a rigid brace.

SYMPHYSIOTOMY; WITH THE REPORT OF A SUCCESSFUL CASE.

BY HENRY J. GARRIGUES, A.M., M.D.,

PROFESSOR OF OBSTETRICS IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL;

CONSULTING OBSTETRIC SURGEON TO THE NEW YORK MATERNITY HOSPITAL;

CONSULTING OBSTETRICIAN TO THE NEW YORK INFANT ASYLUM;

GYNECOLOGIST TO ST. MARK'S HOSPITAL, ETC.

SYMPHYSIOTOMY is an operation by which the symphysis pubis is cut through.

History.—Its history is interesting and full of instruction, but I shall limit myself to a meagre outline, referring those who want more information in this respect, to Kilian's *Operative Geburtshülfe*, Bonn, 1849; Corradi's *Dell' Ostetricia in Italia*, Bologna, 1874; Mangiagalli's *Una Probabile Risurrezione nel Campo dell' Ostetricia Operativa*, Milano, 1882; Desforges' *Thèse de Paris*, 1892, and the article by Robert P. Harris, "Revival of Symphysiotomy in Italy," in *THE JOURNAL*, January, 1883.

In 1768 Jean René Sigault, a French student, proposed the operation to the Academy of Medicine of Paris, and although it was rejected, he had the courage, after having graduated, to perform it, assisted by Leroy, on the wife of a soldier in 1777. At that time Cæsarean section was

almost sure death, and the new operation being supposed to be destined to supplant it, was hailed with enthusiasm, although the result in the first case was far from satisfactory.

A medal was struck by the Academy in honor of the operator, the new operation was extolled from the pulpit, and Camper, who enjoyed the reputation of being the greatest obstetrical authority of his time, declared himself in favor of it. On the other hand, Baudelocque and Lauerjat opposed it from the beginning. It found favor in Italy, but was rejected in England and Germany.

Its following history may be divided into four periods. The first ranges from its introduction in 1777 to the year 1858, for which eighty-one years Harris has only succeeded in finding seventy cases in which it was performed, with a mortality for the mothers of 37 per cent., and for the children of 67 per cent. In spite of this fearful mortality the operation was taken up again by Prof. Morisani, of Naples, and he and other Italian obstetricians performed fifty operations during the fifteen years 1866-80, reducing the mortality for the mothers to 20 per cent., and for the children to 18 per cent.—an immense progress, especially in regard to the latter.

The third period is a short one of only five years (1881-85), during which fifty-two operations were performed, with a maternal loss of 44 per cent., and a foetal loss of 13.5 per cent.¹ If something was gained for the children, the result in regard to the mothers was so much the worse.

The fourth period extends from the beginning of 1886 until the present time, and in it the year 1892 will probably form a turning-point, the operation having spread from Italy, in which country it found a home at a time when it was unanimously proscribed everywhere else, to France, Germany, Austria, Russia, the United States, Ireland, and Canada.²

The origin of this newest movement can clearly be traced. In vain had Morisani written on the subject time and again.³ Most obstetricians cannot read Italian, and if they go to Naples it is more to look at the blue grotto and climb Vesuvius than to inquire for the latest progress in medicine. In vain Mangiagalli, in the north of Italy, had called attention to what had been done in Naples. In vain Harris simultaneously placed the matter before the English-speaking world. But in the year 1891 it so happened that Spinelli, a pupil of Morisani,

¹ Editorial in *The Medical News*, Philadelphia, October 22, 1892; probably from the pen of, or inspired by, Dr. Harris.

² Private communication from Dr. Harris.

³ *Sulla Simfisiotomia*, Ann. di Ostetricia, 1881, vol. iii, No. 10; *Manuale di Ostetricia*, Napoli, 1883, pp. 241-47; *Ancora della Simfisiotomia*, Ann. di Ostetricia e Ginecologia, 1886, vol. viii, pp. 345-91, with a tabular record of eighty cases, 1777-1858.

during a visit to Paris, demonstrated the operation on the cadaver to Prof. Pinard, who wrote an article in its favor even before he had performed it.¹ Simultaneously Dr. Charpentier, of Paris, heard Morisani lecture on the subject in Naples, and presented a report on it to the Academy of Medicine. When Pinard had performed two operations, Freund performed one in Strassburg, in Alsace, the tie between France and Germany. Then Leopold followed in Dresden, and gradually it spread all over the world—my case being the first in the city of New York.

Since the beginning of 1886, 67 operations have been performed, with a maternal mortality of 3, *i. e.* 4.5 per cent.² As to foetal mortality, I know of 8 cases, counting the first three days after birth.

FIG. 1.



Kyphotic pelvis.

Personally I became interested in symphysiotomy through Harris's article, corresponded with Morisani, and had Galbiati's falcetta sent to me from Italy, in 1883. I performed it three times on the cadaver, as described by Morisani, without much difficulty. A fourth case, of which I add a photograph (Fig. 1), was the first patient upon whom I performed Cæsarean section.³ In her, symphysiotomy would have been counter-indicated, because the left sacro-iliac joint was made immovable by synostosis and the right was the seat of extensive caries.

¹ Pinard: *Annales de Gynécologie*, February, 1892, vol. xxxvii. p. 83.

² Private communication from Dr. Harris, of Feb. 9, 1893.

³ Garrigues: *The Improved Cæsarean Section*, *American Journal of Obstetrics*, April, May, and June, 1883, vol. xvi.

Besides this, the symphysis was so irregular that no knife could have been drawn through it. The pelvis of one of the others has become particularly interesting because it is not only of the same kind as that of the living patient upon whom I have performed symphysiotomy, but has exactly the same measurements. We shall come back to it later.

I burned to be the first to perform symphysiotomy in America; but taking into consideration that (at that time) there yet was a considerable mortality; that the old histories reported that women who had undergone the operation had remained invalids for life; that in this country physicians are frequently sued for malpractice, which, even in the case of their getting a verdict in their favor, entails great loss of time and a large fee to a lawyer; and that in my case I would have every chance of losing my suit, since nobody in this city believed in the operation—taking all that into consideration I thought, with Falstaff, that “the better part of valor is discretion,” and my imported knife was allowed to lie for nearly a decade in a drawer with other discarded instruments.

Now, everything is changed. Harris’s last paper and the reports from France and Germany have called the attention of the American Gynecological Society to this operation; every member of this leading society who spoke about it at its last meeting expressed himself in favor of trying it, and all the instrument-makers of the city vied with one another to borrow my falcetta, in order to make a pattern of it. With such a backing it has become quite safe to try the new operation.

Still, before we are dazzled by the report of recent triumphs and rush into reckless imitation, we had better hear what the obstetricians of bygone days, who were opposed to the operation, had to say against it, and examine the conditions of modern success.

Not only was the mortality for both mother and child great, but not infrequently the operation was followed by invalidism. Usually the woman kept a vesico-vaginal fistula (which before Marion Sims’s time was practically incurable), incontinence of urine, an unsteady gait, prolapse of the uterus, or carious destruction of the pubic bones. Frequently one or both sacro-iliac joints ruptured—an accident followed by supuration of these joints with widespread abscesses and destruction of bones. Sometimes the urethra was strangulated between the ends of the bones.

The operation was much more painful than Cæsarean section, and in the way it was then performed it was “incomparably more difficult.” If the patient survived, it was after long sufferings. Cases were not lacking in which women who had been symphysiotomized once, or oftener, subsequently, without the help of art, gave birth to living children, whereas the former painful operations had only yielded dead

children. Many horribly cruel operations were performed with sharp instruments on the living child. The very base of the operation was sapped by the declaration of William Hunter and other great anatomists, who declared that the gain obtained as to space was insignificant. A great drawback was also the circumstance that the surgeon cannot be certain beforehand that he will be able to perform the operation, since he may encounter synostosis of the pubic or sacro-iliac articulations.

Fortunately we live in a time when the pain inherent in the operation, thanks to American genius, need no longer be considered. In old times they cut from the front backward, and do not seem to have taken precautions to protect the urethra and the bladder. Nowadays it would in all probability be possible to cure, by a subsequent operation, a vesico-vaginal fistula left by the first, but it is well to bear in mind that the bladder, the vagina, and the urethra may be caught between the ends of the pubic bones. This may have considerable weight in determining the best *modus operandi*, a point to which we shall come back later.

Many of the diseases produced by the operation were due to erroneous ideas about its applicability. Sigault himself thought that his operation could give help in any degree of narrow pelvis; that it was a substitute for Cæsarean section, and that it was particularly indicated with a true conjugate of two and one-half inches. Paul Dubois was the first who said that Cæsarean section and symphysiotomy had an entirely different field, one beginning where the other stopped, and that symphysiotomy was indicated with a conjugate of just three inches. The old operators had imperfect means of keeping the ends of the bones together. They did not even attempt to obtain healing by first intention, and dressed the wound with charpie smeared with cerate. Antisepsis was unknown.

The bad results obtained in regard to the mother were due to lack of knowledge of the proper limits of the operation; to injuries inflicted on the genital canal before the operation was performed; to a bad technique; and to bad wound-treatment. The foetal mortality was due to the use of symphysiotomy when the pelvis was too small; to delivery at too early a stage of labor; and to improper methods of delivery, especially turning and extraction. As to the space gained, the old anatomists were decidedly in error, as has been abundantly proved by numerous experiments on dead bodies and operations on the living.

In order not to bewilder the reader, I shall premise that the following history is that of a perfectly successful symphysiotomy complicated with puerperal infection.

CASE. *Generally contracted pelvis with male type; in labor thirty-eight hours; symphysiotomy; metritis; nephritis; recovery; child living.*—On December 30, 1892, a little after midnight, I was requested by Dr. S. Murtland to see Mrs. B. with him. She was born in New York, is twenty-four years old, and has been married two and a half years. She has had one child, which was extracted dead by high forceps operation one and a half years ago; and one

miscarriage in the middle of the third month, a year ago. The last menstruation began on March 5th.

When I saw her at 1 A.M. she had been in labor since 3 A.M. of the 29th. Dr. M. had seen her at 9 A.M. and found the same condition as I found sixteen hours later, namely, the cervix hanging soft in the vagina like a bell; the internal os half dilated, but entirely dilatable; a large head above the brim of the pelvis; the posterior fontanelle to the left anteriorly; the fontanelle small and the sagittal suture very narrow. Waters unbroken. The patient was in excellent condition, but labor pains rare.

At 9 A.M. we met again and found the same condition. I measured the pelvis with pelvimeter and hand, and found the following measurements, which are all smaller than the average, viz.:

				Normal. ¹
Spina ilium	21 cm.	=	8½ inches.	10½ inches.
Crista ilium	25 "	=	10 "	11½ "
Diameter Baudelocque .	18.5 "	=	7½ "	8 "
Conjugata diagonalis .	10 "	=	4 "	5 "
Symphysis	6.5 "	=	2½ "	2½ "

The true conjugate was estimated to be 3½ (82 mm.) with a generally contracted pelvis. Strong foetal heart-sound 2 inches below and to the left of the umbilicus.

I then strongly advised symphysiotomy, urging that the first child had been lost, and the following were, as a rule, larger; that while there was a possibility that this one might be born alive, it was very unlikely that it could be done with turning or forceps; and that even to the mother the danger with that form of pelvis, in my experience, was considerable, whereas symphysiotomy gave an excellent chance of saving both mother and child. I explained the matter to the priest, who readily consented to a procedure that was greatly in favor of the child, and even gave the mother better chances than the old operations.

During the day labor pains ceased altogether. At 5 o'clock in the afternoon I operated in the patient's home, a common tenement-house. She was dirty and covered with dirty clothes. I was assisted by Drs. Murtland, G. D. Stewart, and A. P. Coll. The patient was placed on a table and etherized, the pubic hair shaved off, and the skin near the genitals, as well as the vagina, disinfected with soap, water, and bichloride of mercury (1 : 2000).

The patient was laid on her back, the knees and hips bent by the assistants.

With a large convex scalpel I made an incision in the median line from a finger's breadth above the symphysis to the clitoris, and down to the joint between the pubic bones; but finding that this was too small to give access to the whole symphysis, which was fully 2 inches (5 cm.) high without the soft parts, I prolonged the incision both above and below, going ¾ inch (2 cm.) below and to the left of the clitoris, between the labium majus and minus, until the whole incision was 4 inches (10 cm.) long. There was so much adipose tissue on the mons Veneris that it was 3 inches deep when the lips were separated. During this time only half a dozen small vessels bled, which were caught with artery forceps, and did not need tying.

Next, I introduced a blunt, flexible silver director with a curvature corresponding to the posterior surface of the symphysis, close to the same, in order to separate the soft tissue from the bone; and after having withdrawn it I inserted sideways a common blunt-pointed, concave bistoury (Fig. 2, b), turned it against the symphysis, and cut it easily through from behind forward, and from above downward.

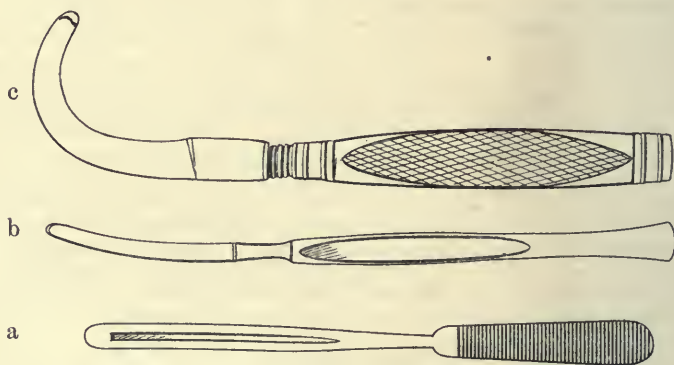
At the last moment, when the lower end was severed, there was a profuse hemorrhage, which instantly filled the deep well. I stuffed this provisionally with iodoform gauze, and proceeded to deliver the child. Henceforth to the

¹ Lusk : Science and Art of Midwifery, 2d ed., New York, 1885, p. 464; supplemented by Spiegelberg : Lehrbuch der Geburtshülfe, 1878, p. 13.

end of the operation the assistants were directed to press moderately on the trochanters in order to prevent too great a strain on the sacro-iliac articulations.

With the fore and middle fingers of the left hand I tore the membranes, which gave exit to a *liquor amnii mixed with so much meconium as to be dark brownish-green, and as thick as pea-soup*. I pushed the hand over the face and seized both feet at once and pulled them down, but the head not receding I put a fillet round the ankle of one in the vagina and pulled it out. After that I pulled the second leg out. The arms were easily delivered, but *the head offered considerable resistance*. The cord was wound twice round the neck; it was loosened and pulled down over the body. I had to introduce the fore and middle fingers into the mouth of the child, and although complete flexion was obtained in this way I had to use all my force on the shoulders of the

FIG. 2.



a. Hay's director. b. Bistoury used. c. Galbiati's falcetta.

child. For a change, I tried the Prague method of seizing both feet and pulling them suddenly and forcibly up over the mother's abdomen, but that did not help at all. I therefore returned to Smellie's; and while the meconium poured out from the anus, and one of the assistants declared to the friends, who, in spite of all entreaties and remonstrances, persisted in witnessing the operation from end to end, that the child was lost, I felt it suck on my fingers, and soon had it out without even tearing the perineum. It was a boy, weighing $7\frac{1}{2}$ pounds (3400 grammes). He gasped and needed only a little spanking to make him cry.

The placenta followed spontaneously, while an assistant compressed the uterus. An intra-uterine douche of two quarts of a 2 per cent. solution of carbolic acid was administered.

When the gauze was removed from the wound the hemorrhage continued, and three arteries had to be tied by carrying a silk thread around them with a strongly-curved needle, through the dense fibrous tissue in which they were imbedded. After that there remained only an insignificant oozing from the wall of the vagina, in the lower part of the wound. In the upper part was the bladder bulging out between the ends of the pubic bones.

These ends, even when some pressure was made on the trochanters, were $1\frac{1}{2}$ inches (4 cm.) apart. I did not try to separate them, and during the extraction they were not visible, so that I am unable to tell how much distance there was between them while the head passed the pelvis.

I tried to insert sutures into the cartilage, as described by Leopold,¹ but

¹ Leopold: Centralblatt für Gynäkologie, July 30, 1892, vol. xvi., No. 30, p. 586.

there was so little cartilage on the end of the bone that it was impossible. I then passed three silk sutures (braided No. 4) through the fibrous tissue in front of the bones, had the bladder held back with the end of an artery forceps, and the trochanters pressed on while I tied the sutures. Next I united the edges of the incision in the soft parts by seven interrupted sutures of the same kind of silk. The six were deep, taking in nearly the whole thickness of the tissue, and one superficial between the two upper deep ones, where the adjustment was a little deficient. When the sutures had been tied, I dusted the wound with iodoform powder, and covered it with iodoform gauze and gutta-percha tissue. Now I had the patient removed to her bed, where three straps of rubber adhesive plaster, two inches wide, were tightened around the trochanters and crossed on the abdomen, just above the wound, while the legs were kept stretched out. A pad of cotton impregnated with corrosive sublimate was placed on the abdomen and held in place by five straps of adhesive plaster, as after laparotomies. A many-tailed muslin bandage was put outside, and a piece of the same material attached to it in front and behind, so as to hold the dressing and a layer of bichloride of mercury cotton covering the lower part of the vulva and the anus in place. A knee-binder allowing a separation of five inches was fastened by suspenders on either side to the abdominal bandage.¹

The patient rallied soon. Pulse 120. Complained of some pain, for which she was given a hypodermatic injection of solut. morph. sulph. (Magendie) m.vij. Diet: Milk, with lime-water, and oatmeal gruel.

The next morning (December 31st) she was free from pain, and remained so during the whole course of the convalescence. She passed her urine herself, being lifted by the trochanters while the bedpan was pushed in and drawn out. The child was allowed to nurse three times a day, and got besides diluted boiled cow's milk to satisfy his hunger. As a curiosity, showing how irrationally the lower population treat their babies, I may add here that at the end of four weeks I found out that he had been given whiskey all the time. No wonder his face became full of pustules, which disappeared as soon as the alcohol was withdrawn.

The child's head measured, at the end of twenty-four hours:

				Normal.
Occipito-mental diameter	. 14.5	cm. = 5 $\frac{3}{4}$	inches.	5 $\frac{1}{4}$ inches.
Occipito-frontal	" . 11.7	" = 4 $\frac{5}{8}$	"	4 $\frac{1}{2}$ "
Bi-parietal	" . 10.0	" = 4	"	3 $\frac{3}{4}$ "
Bi-temporal	" . 8.0	" = 3 $\frac{1}{4}$	"	3 $\frac{1}{4}$ "

—measures which nearly all exceed the average as given and reduced to inches by Lusk,² after Tarnier and Chantreuil.

On January 1, 1893, the patient had a temperature of 102.5°, but the friends said she had had an emotion; she felt very well, and the next day the temperature was again down below 100°. On the 3d and 4th it rose, however, and on the 5th she had a chill lasting twenty-five minutes, during which it reached the tremendous height of 107.5°, and was accompanied by delirium. Ordered ice-cap on the head, antifebrin gr. ijss, and quinine gr. iv, every two hours. Brandy, hot tea, hot bottles to the extremities. On the 6th the temperature was down to 100°, and on the 7th she had again a chill, not so long or so bad as the previous, but still with the thermometer rising to 107°. After that she continued to be moderately feverish until the 20th. The pulse reached 180 per minute during the first chill, and became first normal on January 26th.

¹ See figure in Garrigues' Guide to Antiseptic Midwifery, Detroit, Mich., 1886, p. 28; and American System of Obstetrics, edited by Hirst, 1887, vol. ii. p. 334.

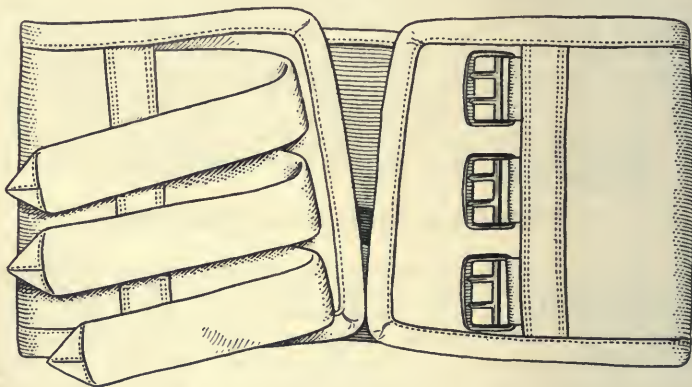
² Lusk: Loc. cit., p. 174.

When, on January 4th, the temperature rose to 103° , the pulse beat 124 per minute, and there showed a little pus around the one superficial suture, I was afraid there might be suppuration in the depth of the wounds. I removed, therefore, besides the superficial suture above, the two lowest of the deep ones, and introduced a fine dressing-forceps, both from above and from below, until it touched the bone, but there was no trace of pus. Having once made the openings, I left, however, a soft-rubber drainage-tube in each. Next, turning my attention to the uterus, I found the fundus $1\frac{1}{2}$ inches above the umbilicus, and tender, also a little tympanites, but no pain. She was given ergotine, gr. ij, three times daily; quinine, gr. v, every four hours; and brandy, $\mathfrak{z}$ ss, every four hours.

When the second chill occurred (January 7th) I removed all sutures. The wound had healed by first intention, except where the tubes were kept lying. I washed out the vagina with a pint of carbolized water (2 per cent.), and then the uterus with three pints of the same, which brought out a dirty reddish-gray discharge. The intra-uterine injections were repeated once daily for five days; the vaginal were given every three hours, and kept up until January 15th.

On January 8th I examined the vagina carefully and found neither tenderness nor swelling, and the bones in perfect apposition.

FIG. 3.



Bandage.

On January 12th she had considerable diarrhœa, with watery, stinking movements. For this was ordered carbolic acid, $\mathfrak{m}$ j, every hour, in a mucilaginous mixture, and it stopped immediately. The urine taken with the catheter was turbid, slightly acid, and contained many pus corpuscles and epithelial cells from the kidney; no casts and no free albumin.

On January 15th the urine was clearer, but contained yet numerous kidney epithelial cells and pus corpuscles. For this catarrhal nephritis and her general debility, she was given tr. ferri chloridi, $\mathfrak{m}$ x, every four hours; tr. nuc. vom., $\mathfrak{m}$ v, every four hours; and tr. strophanti, $\mathfrak{m}$ v-vj, every four hours.

On January 22d the urine was clear and did not contain any abnormal bodies. In the meantime her appetite had become excellent.

From January 16th we fed her on buttermilk, fried chicken, mutton chops, and beefsteak.

On January 18th the uterus was below the pelvic brim. She could lift her

legs, or stemming her heels against the bed lift her pelvis, and turn the knees out, without having any abnormal sensation and without any diastasis in the symphysis examined by the finger in the vagina. There was perfect linear union, no callus, no tenderness, and no mobility in the symphysis.

On January 19th the straps around the pelvis and the drainage-tube were removed, and replaced by a broad bandage of gray coutil with three straps and buckles. It measures 90 cm. ($35\frac{1}{2}$ inches) at the top, 93 cm. ($36\frac{1}{2}$ inches) at the bottom, and is 14 cm. ($5\frac{1}{2}$ inches) broad. (Fig. 3.) This was removed when she used the bedpan, and was left off altogether on the 28th.

On the 23d she got up and walked with a little support. After that she was up every day and walked alone. Her gait is perfect, and she feels all right except for some weakness.

The lochial discharge continuing bloody, iron was exchanged for decoctum gossypii¹ with immediate effect. As a tonic she used caffeine, gr. ij, four times a day, and later a mixture of bark with aromatic sulphuric acid.

It appears from the above abstract of the history of the case that the operation as a surgical proceeding was a complete success, the mother and the child being in excellent condition; but as to the medical side of it, I had to deal with a most serious case of puerperal infection, which had no connection whatever with the operation as such. What was the source of this infection it is impossible to find out. I am so identified with antiseptic midwifery in this country that I am sure my readers on this side of the ocean will believe me, when I declare positively that I did not bring any infection to her during my examinations. Every time I scrubbed my hands most scrupulously, cleaned the nails carefully, and held the hands immersed in a solution of bichloride for three minutes. But there are numerous other ways in which she may have been infected. She had been examined repeatedly before I saw her; she was in labor for thirty-eight hours; all her surroundings, as well as her clothes and person, were dirty; meconium poured out into the liquor amnii; the instruments were kept in the vessels the family use for their meals, and were disinfected by an assistant who has much to do with dissections; during the operation another assistant became excited over the hemorrhage and poked his finger deep into the wound; although I constantly dipped my hands in corrosive sublimate solution during the operation, yet to come in contact with unclean objects was unavoidable; finally, she was, after the operation, taken care of by nurses who were anything but aseptic.

Upon the whole, antiseptis in a tenement-house is a very different thing from antiseptis in the operating room of a hospital, where patient, doctors, nurses, and surroundings are all rendered aseptic. Nearly all the reports I have read about operations in Italy, France, and Germany have been performed in lying-in institutions, which doubtless has

¹ I have called attention to the great value of this uterine hæmostatic in an article in the Post-Graduate, January, 1888, vol. ii., No. 2, p. 117.

been a puissant factor, not only in the final result, but in the uneventful course of the lying-in period.

Although I am happy to report that mother and child are in excellent condition, I have the rare chance to be able to illustrate this article with engravings made from the photographs of a pelvis which offers,

FIG. 4.



Generally contracted pelvis with male type. (Front view.)

FIG. 5.



Same, seen from above.

to all intents and purposes, the same shape as that of my symphysiotomy case described above. (Figs. 4 and 5.) It comes from Mrs. R., a twenty-five-year-old primipara, whom I delivered in Maternity Hospital, on January 25, 1884, by a most difficult turning, extraction, and

perforation of the head through the spinal canal,¹ the mother dying from shock two days after delivery.

MRS. R.			MRS. B.	
Skeleton.		Living.	Living.	
Sp. Il.	$8\frac{1}{2}$ in. = 21.6 cm.	$8\frac{1}{2}$ in. ² = 21 cm.	$8\frac{1}{2}$ in.	= 21 cm.
Cr. Il.	$9\frac{1}{4}$ " = 23.5 "	10 " = 25.5 "	10 "	= 25 "
D. C.	$4\frac{1}{4}$ " = 10.8 "	4 " = 10.2 "	4 "	= 10 "
D. V.	$3\frac{3}{4}$ " = 9.5 "	. . . (estim.)	$3\frac{1}{4}$ "	= 8.3 "

Smallest available: Mrs. R. (skeleton), $3\frac{1}{2}$ in. = 9 cm.

Height of symphysis: Mrs. R. (skeleton), $1\frac{1}{2}$ in. = 3.8 cm. Mrs. B., 2 in. = 5 cm.

D. B.: Mrs. R. $6\frac{3}{4}$ in. = 17 cm. Mrs. B. (a stout woman), $7\frac{1}{4}$ in. = 18.5 cm.

Transverse diameter of inlet, Mrs. R. $4\frac{3}{4}$ in. = 12 cm.

Oblique diameter of inlet, Mrs. R. $4\frac{5}{8}$ in. = 11.7 cm.³

Even the children must have been of the same weight, Mrs. R.'s weighing $7\frac{5}{8}$ pounds after evacuation of the brain, and Mrs. B.'s $7\frac{1}{2}$.

This male type of generally contracted pelvis is the most common kind of narrow pelvis I have met with in New York, and Dr. Edward Reynolds made the same remark about Boston at the last meeting of the American Gynecological Society.⁴ During a service of over ten years in Maternity Hospital, I have not seen a single rickety pelvis. The population I had to deal with was, with few exceptions, American or Irish. With the great deterioration in the quality of immigrants and the enormous increase in the number of women coming from Italy and Russian Poland, we will, however, soon have all the shapes of pelvis described by European authors.

This kind of pelvis is particularly difficult to deal with, and I had so often had the same sad result of my labors as in the case of Mrs. R., that in the last case I had of the kind I even dictated an entry in the history-book of Maternity Hospital to the effect that in my opinion it would be better hereafter to perform Cæsarean section in such cases. But now we have in symphysiotomy the very remedy for this form of pelvis.

In the above-described case, the true conjugate was estimated to be $3\frac{1}{4}$ inches; but, taking into consideration that—if we substitute the

¹ By the way, this excellent method of dealing with the after-coming head of a dead child is also an old Italian invention.

² These are the measurements as they are found in the history; but they are, of course, too small, since the pelvis, without the soft parts, measures more. Such small errors are, however, unavoidable in dealing with living patients.

³ Normal (according to Lusk, loc cit., p. 158): Transverse, $5\frac{1}{2}$ in. = 13.3 cm.; oblique, 5 in. = 12.7 cm.

⁴ E. Reynolds: Trans. Amer. Gyn. Soc., 1892, vol. xvii. p. 124.

measurements of the superior strait as found in Mrs. R.—the transverse diameter is half an inch, and the oblique nearly as much, below the average, the obstetrical effect is about the same as in a flat pelvis with a conjugate of $2\frac{1}{4}$ inches or less.

I am confident that that child could, neither by turning nor by forceps, have been brought out living; and if, with the comparatively mild operation of symphysiotomy, we had so severe a case of puerperal infection, there is no doubt in my mind but that, with the same infection added to the bruising inherent in difficult forceps and version operations, the mother would have succumbed, too.

(To be continued.)

COCAINE IN THE TREATMENT OF VARIOLOUS AND VARIOLOID INFECTION.

BY EDWARD PEPPER, M.D.,
OF ALGIERS.

IN 1889 we published a report of an epidemic of smallpox and varioloid whose spread was promptly arrested under the most unfavorable circumstances.¹ The ancient, and therefore firmly fixed, habit of the Arabs of inoculating smallpox (generally between the thumb and the index) is well known, and constitutes a permanent source of danger to all communities dwelling in their neighborhood, as well as to those residing in their midst. This practice is one of the many factors—perhaps not the least—of the difficult problem offered to Europeans in their actual attempts at African colonization and improvement. In the United States vast territories, such as New Mexico, containing a mixed population composed, as yet, largely of Mexicans and Indians, among whom vaccination and, indeed, all hygienic measures are rare, pay a large annual tribute to the scourge.

Simply recalling the principal means employed to alleviate or to arrest the extension of the disease, such as the immediate isolation of the contaminated, and, when practicable, the application to a whole region, if necessary, of other rigid sanatory measures, generally even more difficult of enforcement, we consider that a short reference to the treatment first recommended by Luton will not be found wholly devoid of interest. This treatment consists, as is well

¹ A Contribution to the Study of Epidemic Diseases. P. Fontana & Co., Algiers, 1889.

known, in the judicious use of cocaine, given by the mouth or in the form of suppositories. The observations which we published at the time (1889) cannot be reproduced in a communication of the nature of this article, and reference simply is made to them, as well as to the subsequent observations, some quite recent, which we have related upon the same subject.

The benefit to be derived from the judicious use of cocaine in smallpox and in varioloid is such, from our personal experience covering the last four years, that we deem it important to recall the attention of the medical public to a mode of treatment offering such special advantages. Our conclusions, published four years ago, were and are yet as follows :

1. By the use of cocaine, variolous and, *à fortiori*, varioloid poisoning can frequently be arrested in a marked degree—strongly attenuated.

In smallpox the disorganization of the blood seems to be generally less rapid and less extensive after the careful administration of the drug; the fever is less severe and of shorter duration in most cases, secondary fever not being manifest sometimes; an incomplete evolution, a semi-abortion of the vesico-pustules, or of the pustules, being of frequent occurrence when cocaine has been regularly employed during the second period of the disease, and that as soon as the eruption is clearly characterized; finally, the divers visceral congestions and inflammations are less frequent and less intense. Briefly, the whole course of the disease appears to be favorably modified in most if not in all cases.

2. As in all other diseases, so in smallpox, the actual stamping-out of the disease *ab incipio* can never be clearly proven to have been accomplished by any treatment; in smallpox the eruption must have become distinctive before the diagnosis can be firmly established. During an epidemic of the disease it would be interesting to study the possible action of the drug as a prophylactic when given to those who are particularly exposed to the contagion, such as the members of families where smallpox reigns, the unvaccinated, etc.

3. In variolous poisoning, toleration is strongly marked for a substance presenting special dangers when given under other circumstances and without due discernment—that is, without regard to the laws of posology and to possible idiosyncrasies.

4. When cocaine is given by the stomach, a 4 per cent. solution is conveniently administered four times in each twenty-four hours to a patient of five years of age; at the age of ten years ten drops four times in twenty-four hours, and so forth, increasing the doses by one drop four times during each twenty-four hours for each year of age; at twenty years of age twenty drops are to be given four times in the twenty-four hours. With the normal droppers to be procured from all chemists, this dose is quite sufficient. Each dose is to be given in a small quantity of

water or otherwise, according to taste. One-half of the above quantities is frequently sufficient to obtain the desired results. An agreeable mode of administering the medicine to children and to fastidious patients generally, although the drug is practically tasteless, is that which consists in giving it in the form of sweetened pastilles, each pastille containing the twenty-fourth part of a grain of cocaine, with or without a small quantity of pepsin.

Such are the posological scale and the mode of administering the medicine by the mouth which experience has taught us to employ in average cases.

5. The doses of cocaine given in the form of suppositories are not to be considered as being necessarily absorbed *ex integro*; in this latter form there is naturally an unknown quantity absorbed. The suppositories should be used at intervals of six or eight hours apart, the quantity of the medicine thus administered in twenty-four hours never being greater than that given by the mouth.

6. When given hypodermatically, a mode of giving cocaine scarcely to be recommended except in incipient cases of smallpox, where it could not be given by the mouth or by the rectum, the doses above recommended should be one-fourth of the doses indicated for ingestion in average cases.

7. The effects of all doses, in whatever manner given, should be attentively watched, idiosyncrasies as to the tolerance of all powerful drugs, and especially of cocaine, being of so frequent occurrence. At the first sign of a physical action being produced, the giving of the cocaine should be stopped and the well-known means of arresting its toxic effects should be employed.

8. Of course this treatment does not exclude the use of almost any of the usual means properly employed to combat the disease; but the field should be left free, as far as possible, to the full—and frequently so to speak, exclusive—development of the useful effects that we have a right to expect from cocaine when employed against smallpox in its second and third stages. As to topical remedies, whether calomel, salicylic acid or boric acid, or any other substance be preferred, they are generally a useful, frequently an indispensable, adjunct to this as well as to any other internal treatment of smallpox or of varioloid. In many cases where cocaine has been methodically given, topical treatment has been slight, and sometimes unnecessary.

NOTE ON A USUALLY OVERLOOKED CONDITION IN THE
GRAVE CONVULSIONS OF INFANCY AND
CHILDHOOD.

BY NORMAN BRIDGE, A.M., M.D.,

PROFESSOR OF CLINICAL MEDICINE AND PHYSICAL DIAGNOSIS, RUSH MEDICAL COLLEGE, CHICAGO.

Two forms of convulsions are frequent in infancy and childhood. One is a true epileptic seizure that comes suddenly without apparent accompanying illness; the fit is brief, and is recovered from promptly and completely. This fit is apparently provoked by some slight physiological disturbance, as indigestible food in the alimentary canal; or none may be discoverable, the seizure appearing to be truly spontaneous. Often repeated, this becomes the confirmed epilepsy of later life.

In the other form, the fit is prolonged—a true eclampsia; at first violent, it passes into a state of slight convulsive movements, irregular jerking of the muscles, particularly of the face and head, not profound, but repeated at intervals of a few seconds or a minute or two, with often some divergence of the eyes and complete unconsciousness. In this way it may continue several hours or a day, ending in slow recovery or in death. The more prolonged the attack, the greater the danger of death.

By most practitioners these two forms are regarded and dealt with as identical; the short fits are regarded as milder seizures of the same character as the profound and long-continued ones, but a little careful observation of the eclamptic seizures will convince anyone that they differ in a marked manner from the evanescent fits. The most notable clinical difference—to emphasize which this note is written—is the presence of high fever (102° to 108° F.) in the eclamptic form. It may almost be regarded as an axiom that fever is present whenever the convulsive movements are prolonged beyond a few minutes, and that the movements cease, with evidences of returning consciousness, the moment the temperature is reduced to nearly normal. The higher the temperature, the more marked and persistent the convulsive movements usually are, although there are some exceptions to this rule.

The fever is probably induced by some zymotic poison, as that of an eruptive fever, or by some dietetic or other hygienic disturbance or derangement, by some fright or other shock to the nervous system, or there is some local inflammation or other pathological condition capable of inducing fever. Whatever the cause, there is a cerebral condition that must be similar to that of thermic fever or sunstroke; a condition of congestion or irritation that produces a powerful inhibitory influence on the heat-controlling centre of the brain, that both by what it is and what it does jeopardizes the integrity of the vital centres and induces a

tendency to death. This tendency is always, as in insolation, promptly lessened by a reduction of the temperature.

The temperature of a child in a convulsion should always be taken carefully with a thermometer; the sense of touch is wholly unreliable and should never be depended upon.

While many cases of convulsions in infants and children are treated by physicians, perhaps a majority are managed domestically, often in accordance with notions acquired from doctors, and whether in lay or professional hands the management is similar in the majority of cases. The child, if an infant, is usually put into a very warm bath, mustard is applied to its feet, and perhaps mustard is added to the water of the bath; it is then wrapped in thick wool blankets and kept in this state, whatever its apparent temperature, and its recovery is hoped for. The bath is not objectionable and may be useful if it does not raise the temperature or prevent its reduction, but the mustard is more harmful than otherwise; and any treatment that prolongs the period of fever or delays the moment of defervescence may be said boldly to be so reprehensible as to be wholly without excuse.

The best way to reduce the fever is by the use of water in the form of a cool bath or full sponging, with the patient nearly or quite naked. The extremities should not be allowed to become cold, and if the temperature is reduced rapidly the process should be stopped by the time the thermometer in the rectum registers 101° F. A temperature of 108° in a child can be reduced to nearly normal in half an hour, and with entire safety to the patient.

There are, doubtless, several sedative drugs that are capable, in these cases, of safely tranquillizing the nervous system, lessening the convulsive movements, and doing for the nerve-centres in a small way the something that is accomplished by a reduction of temperature. The best of these are opium and hydrate of chloral. The latter I regard as the most useful drug extant for such cases, and if it had no other claim to favor would, by what it is capable of doing for the class of children here referred to, be entitled to be regarded as one of the most useful of remedial agents. The dose should be at first the medium one for the age of the patient, but it should be often repeated, and may be increased rather rapidly to the maximum. We should be specially careful to know that the drug is absorbed. An enema is one of the best means of administration. Asafoetida, in the form of clysters of the officinal mixture pure, is a most useful remedy in these cases, to be used preferably after the bowels have been freely evacuated, but it cannot for a moment fill the place of chloral in tranquillizing the convulsive phenomena. The bromides are quite useless as a remedy for an existing attack; they are valuable to prevent recurrences, but act too slowly for an emergency.

REVIEWS.

A TREATISE ON NERVOUS AND MENTAL DISEASES, FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By LANDON CARTER GRAY, M.D., Professor of Nervous and Mental Diseases in the New York Polyclinic, etc. With 168 illustrations. Philadelphia: Lea Brothers & Co., 1893.

DR. GRAY's book has been announced as in press for a long while, so that his friends and the medical public in general have had ample time to form great expectations of it. It was but natural that the announcement of a new systematic treatise on nervous diseases by an American author should be received with interest in this country, because, while very prolific of journal articles and monographs, American neurologists have produced but few elaborated general treatises. It must have been felt by all that the time had come for a new and representative book, and that that author would be both happy and fortunate who would meet this want in the reading and teaching ranks of the profession. This want, we can now say, has been doubly met, for Dr. Gray's book appears in friendly rivalry with that of Dr. Dana; and how well we think it has done its part to fill the demand it will be our pleasure to state briefly here in review.

Dr. Gray's book has several merits, of a general kind, which at once strike even the casual reader. It has, for instance, the evidence of wide and industrious literary research. It is evident that the author has drawn, and drawn profitably, from many sources for illustration and enrichment of his text. This gives the book a special value for literary reference—an advantage of which we have already availed ourself. He has appended to many of his chapters copious bibliographical lists, which, even if they savor of the workshop, yet introduce the reader to many a valuable and timely book.

Another merit consists in the originality and distinctness of many of the photographic illustrations. While the book cannot be said to be copiously illustrated, yet many of the cuts are original, and these have been made from clear and evidently faithful photographs. This is true not only of the clinical, but also, what is much more rare in text-books, of the anatomical illustrations. We meet comparatively few of the old familiar diagrams that have been made to do duty to a generation of book-makers. We notice, however, that credit is not always given for borrowed illustrations, as, for instance, in the cases of several cuts from Edinger. This is doubtless an inadvertence, but as Dr. Gray says in his text that all illustrations are original except those credited to their proper sources, we think best to call attention to this omission.

The first chapter of the book is an Anatomical Introduction. The author has evidently taken great pains with this, and has made a praiseworthy attempt to found it as much as possible upon his own observa-

tion. To the clinician, who is not necessarily an expert in anatomy, the composition of this part of a text-book on nervous diseases must be often a sore trial, just as the result must sometimes be a disappointment to both himself and his readers. It is enough to say that this portion of Dr. Gray's book impresses us as being well and conscientiously done; that the author is thoroughly alive to the importance of making an anatomical study the basis of good neurological work; that he has not only made original investigations of the subject, but has wisely followed such masters as Meynert, Edinger, and Ferrier; and that he has thus composed a safe and intelligible guide to practice. We regret that he has not made more conspicuous, after the manner of Edinger, the embryological and comparative study of the brain, because this is at once the key to and the foundation of a clear knowledge of brain anatomy.

Dr. Gray shows his faith in electricity, and at the same time his appreciation of the wants of many of his readers, by presenting a very complete chapter on the subject. He tells us that he is not writing a text-book on electricity, but nevertheless he presents a chapter which, if printed alone, would be a very compact and useful little monograph on this essential agent.

Passing rapidly over the chapters on Localization and Tests, or methods of examination, of the various symptoms of nervous diseases—which chapters are composed with the same care and expressed with the same brevity and point as characterize the one on anatomy—we come to the gist of Dr. Gray's book, the clinical descriptions. Here, too, we note several general facts. Dr. Gray, for instance, always speaks with the dogmatism that marks the original observer and that carries conviction to the inexperienced and unlearned. Familiar tenets are here and there briefly criticised or condemned; while occasionally some novel clinical fact which has escaped all other observers is concisely stated—always with the directness of one speaking with authority. This tone in the book, which is always well modulated and thoroughly under control, will add attractiveness and weight to the author's utterances in the opinion of not a few of his readers.

Another general characteristic that strikes us most favorably is the prominence given to the symptoms and the treatment of these diseases. Hence Dr. Gray's book is a very practical one. It does not devote undue space to the microscopic appearances of diseased nerves and tissues which the general practitioner and student see hardly once in a lifetime. Pathology and morbid anatomy, so essential to the expert, are not neglected; but therapeutics, the goal of the practitioner, is completely and exhaustively discussed.

How can we discriminate among these well-written chapters for the purposes of our brief review? We find here constantly the evidence of the thought and endeavor of a man whom we know to be giving us the best fruits of his life's work. To discriminate would be unjust. To merely praise would be fulsome; while to imply a fault would be as ungracious as it would be unmeant. We shall, however, specially note a few chapters which merit attention not because they rise above the general excellence of the others, but because their subjects commend them at this time to the attention of our readers.

Dr. Gray attributes multiple neuritis to a list of causes which almost without exception mean some form of poison circulating in the blood. He includes, it is true, age and sex—which can hardly be called the

causes of any disease; and cold and overstrain, which are probably merely predisposing; but all other causes named by him are infectious or toxic agents. The author is thus closely in accord with the best observation of the day, which tends steadily toward the establishment of a humoral or vito-chemical pathology. We make special mention of this, because this humoral pathology for a time seemed to have progressed no further than the periphery; the cord and other parts of the central nervous system being still, under the old dispensation, subject to degenerations and system-lesions which in many cases occurred, for all we knew, without a cause. But this criticism, we are happy to say, does not apply to Dr. Gray; for in his excellent chapter on myelitis he arrays almost the same causes as those leading to neuritis. He wisely adds trauma, and unwisely, we think, violent emotion. The former certainly leads to a destruction-myelitis, and both trauma and the emotions lead to a pseudo-myelitis, often a hystero traumatism, which ought to be carefully differentiated. As for cold, we believe that in Feinberg's experiments on rabbits, in which the loins were refrigerated and myelitis resulted, we see simply a form of destruction or trauma; while in many cases in the human subject, in which cold acts together with dampness, we may assume, with Gowers, the generation of a kind of "rheumatic" humor. The point that we wish to emphasize is that Dr. Gray seeks for an intelligible cause of inflammation as well of the cord as of the peripheral nerves.

That this same tendency to seek a definite cause is beginning to assert itself with reference also to the system-lesions, or degenerations, is shown by the recent attempt of Erb, Minor, and others to demonstrate that syphilis is the almost universal cause of locomotor ataxia. In this they but rehabilitate the doctrine of Fournier in 1875. Dr. Gray sees in all this a rare posthumous tribute to the clinical genius of Duchenne; and after this graceful introduction passes on to the description of tabes in a learned and highly finished essay.

Dr. Gray takes a singularly cautious and conservative attitude on the subject of syringo-myelia. His discussion of the pathology of the disease is founded evidently upon his usual extensive reading, which gives to his writing on this subject the air rather of learning than of observation. He quotes various observers, and seems to incline to a recent opinion of Joffroy and Achard as to the non-gliomatous nature of syringo-myelia. But this is largely a question of names; the point is that the disease presents a neuroglial proliferation with cavity-formation within the cord. To our surprise the author permits himself to doubt the accuracy of the symptomatology of this disease, and even says that a diagnosis has never been made before death. This is strangely inaccurate; and even more so to say, as Dr. Gray does, that a diagnosis of syringo-myelia *cannot* be made. We know of at least two cases in Philadelphia in each of which a diagnosis, based upon the symptomatology established by French and German observers, was correctly made several months before death, and verified by the autopsy. It is but just to Dr. Gray to say that these cases have not yet been reported. In his second edition we doubt not that the author will feel impelled to re-cast his chapter on this important subject—a subject which has great significance in its bearing upon our future conceptions of some of the diseases of the cord.

Dr. Gray discusses much more impartially such attractive subjects as Friedreich's disease, myxœdema, acromegaly, railway injuries, and

traumatic diseases of medico-legal interest. His chapter on this latter subject is remarkably clear and able. He systematizes and compares phenomena in a masterly manner, and with a precision which has evidently been acquired on and for the witness-stand. His bent is toward a distinctive symptom-group, caused by trauma, which when once recognized and adopted will enable everyone to determine these cases with exactness. In this attitude he is clearly on the American side as well as on the side of the plaintiff. He calls this symptom-group *traumatic neurasthenia*. He discusses but does not follow Charcot and the French school, who appear to us to have taken the most advanced scientific ground upon this subject.

Dr. Gray's book closes with an important section on mental diseases. This is a unique feature for a text-book on nervous diseases, and one, we are sure, that will commend it to many readers. After all, the two classes of subjects are closely allied, and a concise treatment of both within the same covers is for many a desideratum. Some of the author's statements are almost epigrammatic, and he wisely tells us that his classification of the insanities is found in the table of contents. In brief, but instructive chapters, he outlines the various psychoses and the few organic insanities. If space permitted, we would gladly draw attention to the many excellences which we have found in these portions, and which, we may briefly state, are identical with those already noted.

In closing, we congratulate the author upon the completion of his task, and hope for his valuable book a long and honored career.

J. H. L.

THE STUDENT'S HANDBOOK OF SURGICAL OPERATIONS. By FREDERICK TREVES, F.R.C.S. Philadelphia: Lea Brothers & Co., 1892.

THERE are few authors of the present day whose work so uniformly reaches the highest level as does that of Mr. Treves. He never writes ponderous nothings; he does not ride hobbies to destruction; he believes in theory as an aid to the practical; he insists on the importance of anatomical learning; he is a voice and not an echo, and he has, to a remarkable degree, the power of writing with clear condensation, and of marshalling his views in systematic array.

This book presents the characteristics we have noted. As it is abridged from the author's splendid manual of *Operative Surgery*, which was so recently reviewed, any extended notice of it is needless.

We here find presented the essential and "most commonly performed operations," for the use of students who are coming up for examination or who are doing operations on the dead body.

Each article is carefully subdivided under headings. For instance, under Ligation of Radial Artery we find "line of artery," "position," etc., as special headings which catch the eye and stick to the memory. Considered in the order named, are: ligature of arteries; operation upon nerves; amputations (in which Wyeth's bloodless amputation at the hip-joint is, through some strange oversight, omitted); operations on bones and joints; tenotomy; plastic operations; operation upon the neck; operations upon the abdomen; operations on hernia; operations upon

the bladder; operations upon the scrotum and penis; operations upon the rectum; operations upon the head and spine, and operations upon the thorax and breast.

This is an admirable little book, and a variety of work that men like Mr. Treves unfortunately so rarely undertake, that we have the market inundated with inferior productions. According to Gresham's law, debased money drives good money out of circulation. In literature a reversal of this process should occur, and good books ought to drive inferior ones out of circulation. If this latter rule obtains, a number of aspiring productions will find the dustiest corner, and this little work will be substituted on the study-table.

J. C. DA C.

THE CHEMISTRY AND THERAPEUTICS OF URIC ACID GRAVEL AND GOUT.

Being the Croonian Lectures for 1892, delivered before the Royal College of Physicians of London. With Additions. By SIR WILLIAM ROBERTS, M.D., F.R.S. 8vo., pp. vii. 136. London: Smith, Elder & Co., 1892.

IN these lectures, four in number, the author enters into an elaborate investigation of the chemistry of uric acid gravel and gout. With reference to these conditions his conclusions are: 1. That free uric acid is not known physiologically in the body nor in the urine, but is known clinically and pathologically as crystalline sediments in the urine and as gravel and calculus in the urinary passages. 2. That neutral urates are not known pathologically nor physiologically. 3. That bi-urates occur pathologically as components of gouty concretions in the tissues and that they occur in the urine only after it has undergone ammoniacal fermentation. 4. That quadri-urates constitute specially the physiological combinations of uric acid; they exist normally in the urine, and probably also in the blood; and that all the morbid phenomena due to uric acid arise probably from secondary changes in the quadri-urates.

In the normal urine after a varying length of time these secondary changes in the quadri-urates result in the spontaneous precipitation of the entire amount of the uric acid. Therefore, the pathological significance of uric acid depends upon the rapidity with which its precipitation takes place before the voidance of the urine from the bladder, or before the passage of the urine from the pelvis of the kidney to the bladder.

In his consideration of the therapeutics of uric acid gravel, the author holds that after a concretion has once formed in the kidney or bladder, but little prospect exists of its solution by imparting solvent qualities to the urine. It is chiefly in the field of prophylaxis that results are to be expected. The prophylactic measures the author recommends consist in the regulation of the diet as to the taking of nitrogenous foods, and the administration of alkalies, including the alkaline mineral waters. The alkalies, of course, are given with the view of keeping the urine alkaline, since it is impossible for the precipitation of uric acid to occur while the reaction of the urine is alkaline.

Under the consideration of gout, the author states that its most characteristic feature is the formation of chalk-like deposits in certain parts and tissues of the body; and that the essential component of these

deposits is bi-urate of sodium in the crystalline condition. If it were possible to keep the sodium bi-urate in a state of solution in the bodily fluids, the clinical picture of gout would be completely transfigured.

The precipitation of sodium bi-urate the author found, experimentally, to occur in the following manner: "In the gouty state, either from defective action of the kidneys, or from excessive introduction of urates into the circulation, the quadri-urate lingers unduly in the circulation, and accumulates therein. The detained quadri-urate, circulating in a medium which is rich in sodium carbonate, gradually takes up an additional atom of base, and is thereby transformed into bi-urate. This transformation alters the physiological problem. The uric acid, or rather a portion of it, circulates no longer as the more soluble and presumably easily secreted quadri-urate, but as bi-urate, which is less soluble, and probably also—either for that reason or because it is a compound foreign to the normal economy—less easy of removal by the kidneys. The bi-urate thus produced exists at first in the hydrated or gelatinous modification. But with the lapse of time and increasing accumulation, it passes on into the almost insoluble anhydrous or crystalline condition; and the precipitation of it becomes imminent, or actually takes place."

The treatment of gout the author considers from the standpoint of the prevention of attacks. After reviewing the proper diet and regimen suitable for a person of gouty disposition, the efficacy of certain mineral springs is discussed. The author holds that all waters owing their activity to sodium salts should be avoided, since an increase of these salts in the bodily fluids hastens the precipitation of the sodium bi-urate. Those springs, therefore, the waters of which contain a minimum sum of mineral constituents, he advises as being most useful in the gouty condition; their action being one of dilution of the blood with consequent lowering of the percentage of urates and sodium salts.

Piperazine, a drug of late attracting much attention, the author found to exercise no influence whatever on the advent of precipitation of sodium bi-urate. Although it is stated on page 129 that piperazine possesses a high solvent power on free uric acid, yet the author makes no reference to its employment in the treatment of uric acid gravel. T. G. A.

REGIONAL ANATOMY IN ITS RELATION TO MEDICINE AND SURGERY. By GEORGE MCCLELLAN, M.D., Lecturer on Descriptive and Regional Anatomy at the Pennsylvania School of Anatomy, etc. Illustrated from photographs taken by the Author, of his own dissections, expressly designed and prepared for this work and colored by him after nature. In two volumes. Vol. II. Philadelphia: J. B. Lippincott Company, 1892.

In our review (February, 1892) of the first volume of this important work, we considered at some length the characteristic principles which give the work its individuality, and the degree of success which the author had attained in executing it on the plan he had proposed to himself. The general conclusions we reached were: that, beautiful as the plates certainly were, some were decidedly wanting in clearness; and that

in all a more diagrammatic handling would have been better for teaching purposes. We had the pleasure of expressing our admiration of the author as a dissector and of praising the practical applications of anatomy scattered throughout the book. We intimated, however, that he did not follow methods of study which had become common only in the last generation, but adhered very closely to dissection (in which he excelled) and to non-frozen sections.

The second volume leaves our opinion on these points practically unchanged. There is much to praise in the plates. Many of those of the lower extremity are beautiful and very clear also. One of the superficial muscles of the back is admirable. Those of the internal parts please us less. Some, indeed, displease us, as those of median sections of the female pelvis, showing a long, distended, and quite unnatural vagina. The fault here is not so much in the plate as in the preparation. Plate 61 suggests an idea of the origin of the vermiform appendix which we cannot believe to be correct. It seems hardly possible that it should have arisen at the ends of the longitudinal bands on the cæcum, though we know it must have done so. We are sorry to find no mention of this very important point in the text, for there is no surer nor simpler way of finding the appendix than to follow one of these bands. The treatment of the peritoneal relations of the cæcum seems to us wanting in clearness. We are told that this organ is usually surrounded by peritoneum, which is undoubtedly true; but only a few lines lower down we read that "there is often a great deal of loose areolar tissue between the posterior surface of the cæcum and the iliac fascia, which is the seat of abscess in cases of perforation of the cæcum or of the appendix." If this means that often the posterior surface of the cæcum has no peritoneal covering, we must beg leave to object. If it means that this areolar tissue is retro-peritoneal, it should have been so stated.

The liver is not described as having a posterior surface, nor is the last ascending portion of the duodenum mentioned. We find only that the third portion passes "somewhat obliquely across the spine." The important fact that the last part of the duodenum rises strongly is thus overlooked. On the other hand, the following passage is so true, and expresses so strongly Dr. McClellan's views, that it is a pleasure to quote it: "The triangular ligament of the perineal region, although undoubtedly important, has been so emphasized and exaggerated by laborious descriptions that the student who attempts to verify these upon the dissecting-table generally becomes bewildered, and is forced to accept a great deal on faith. Diagrams are, at the best, but the expression of ideas, and their very distinctness is misleading in producing the impression that all the structures pertaining to this especial locality are bounded by fixed lines." The use and abuse of the diagram in teaching is, indeed, a difficult question. Probably there would be less need of it if all teachers described this region as clearly and simply as our author does. There is at the end a good index of this volume, followed by another of the whole work. In our former notice we spoke of the excellence of type and paper. Though, in our opinion, the work is not free from defects of design and execution, it is one which calls for great praise.

T. D.

GUY'S HOSPITAL REPORTS, LONDON. Edited by N. DAVIES-COLLEY, M.A., M.C., and W. HALE WHITE, M.D. 1892.

DR. FREDERICK TAYLOR, in the same lucid style that made his work on Practice a notable one, contributes an article on "A Case of Actinomycosis of the Liver and Lungs," and another on "Malignant Endocarditis." The latter is particularly valuable, detailing as it does the histories of fifty-three cases, eighteen of which came under his personal observation.

Having discussed the nomenclature of the affection, he proceeds to speak of its pathology, which is well handled, although incomplete in a bacteriological point of view.

It is interesting to note that eleven of the fifty-three cases reported appeared on the right side, about the same proportion reported by other late writers. Hasler, for instance, found the right heart affected in thirty-four out of two hundred cases.

Dr. Taylor pronounces the prognosis to be very bad, but not absolutely hopeless, and cites some recoveries to substantiate his statement. It is difficult to understand why the disease should be so universally fatal, if we accept the dogma that it may originate from most varied sources. Who shall draw the line between the malignant and the simple cases?

The article is a real addition to our literature.

Mr. Davies-Colley reports a successful case of ileo-colic implantation, which is of interest not only because of its rarity, but because for a period of some months his patient had a fistula of the ileum, which part of the intestine was quite cut off from the remainder of the gastro-intestinal tract, thus affording an opportunity for studying the pure *succus entericus*.

Such study was made by Mr. Tubby and Mr. Manning, and their account of these investigations has led to some interesting and valuable pages.

These gentlemen refer to Dana's *résumé* of the work done on this subject up to 1882 (*Medical News*, Philadelphia, 1882, vol. xli. p. 59), after which they describe the qualities of the *succus entericus*, which they obtained under careful antiseptic precaution, and then relate their series of experiments. These they summarize by affirming that "a very important function of the succus entericus is to complete salivary and pancreatic digestion." The contribution is commended to those interested in this important field.

Dr. E. C. Perry and Dr. L. E. Shaw present a minute study of fifty specimens of malignant disease of the stomach, found in the hospital museum, which deserves high commendation.

Dr. H. J. Campbell suggests a new answer to the old question, "Why does phthisis begin at the apex?" He thinks that it is because these parts are extra-thoracic. The reader is likely to conclude that no more reasonable explanation has been offered.

In another article, Dr. Birdwood gives his reasons for believing that smallpox is a surface mycosis rather than a blood zymosis. It seems to us that the author evades the matter of the appearance of the eruption in the newborn.

Dr. W. Hale White demonstrates the fallacy of the belief that hydrochloric acid is a useful remedy in chlorosis. Like its predecessors, the report is most commendable, and one regrets that lack of space forbids further consideration of such valuable material. It is also to be regretted that Guy's Hospital Reports are not more generally seen on the shelves of our libraries.

C. G. S.

MEDICO-LEGAL STUDIES. Vol. II. By CLARK BELL, Esq. New York: Press of H. F. Clinton, 1892.

THIS book is a continuation of some studies made by the author in 1889, and appearing, as he tells us in the preface of this work, in June of that year, entitled *Medico Legal Studies*, Volume I., for private circulation.

The book now before us, Volume II., is a history of the result of what has been done during the past two years in the science of medical jurisprudence through the efforts of the Medico-Legal Society of New York and its president, the author, Clark Bell, Esq.

The work consists of a collection of essays in which questions both of medical and legal significance are discussed. There are also added to the work copies of a number of reports made to the Medico-Legal Society on these subjects by committees appointed for the purpose, also several inaugural addresses by the president of the Society.

The topics treated of are many and varied, such as—Recent Judicial Departures in Insanity Cases; Belgium and Her Institutions for the Insane; Electricity and the Death Penalty; Monomania; Separate Hospitals for Insane Convicts; Hypnotism; Spiritualism and Testamentary Capacity; Insanity as a Defense in Pennsylvania; Lunacy Legislation in New York; The Coroner's Office—Should It be Abolished? Among the most important subjects of which the essays treat is the first one, namely, Recent Departures in Insanity Cases. The writer enters into the subject and discusses it at length. The essay appears to be a plea for better legislation in regard to the trial of lunatics in criminal cases. The ability, the writer says, to distinguish between right and wrong among criminals pleading insanity is not a fair test of their responsibility, and many insane are convicted and executed. Where there is any reason to suspect insanity an inquiry should be conducted before the trial by competent medical experts. Mr. Bell quotes in full the trial of two cases involving the question of insanity, reported from the highest courts of two of our States, in order to show the changes going on in the judicial mind in this country.

Another subject which is treated of at length is found in the essay on The Coroner's Office—Should It be Abolished? The writer recites the duties of a coroner, and states the features of the office existing in most of the States of this country at the present day. The Massachusetts Act of May 9, 1877, is quoted in full, in which the office of coroner is abolished, providing for medical examinations and inquests in cases of death by violence. The author calls attention to the fact that "whatever the verdict of the coroner's jury may be, the subsequent indictment, trial, and entire judicial proceeding is absolutely independent of it, and proceeds as if the coroner's jury had never acted

at all." This renders the proceeding, he says, a "useless" one. The work of investigation can be done much better and easier by competent medical experts.

The subject is treated intelligently, showing a thorough study of the question on the part of the writer, and is a strong argument in favor of the abolition of the coroner's office.

In the essay on Monomania the author suggests that the term "monomania" be dropped, from the fact that physicians say they never saw a case of insanity where the delusion was confined to any one subject, and that it is misleading in courts of justice. The paper, it seems, was prepared to call the attention of the Medico-Legal Society and the American Association of Medical Superintendents of Insane Asylums to the subject.

In the essay on Separate Hospitals for Insane Convicts, the writer states that he considers it an outrage to compel an insane person to associate with convicts, sane or insane, and says that none feel this more than the insane. Mr. Bell suggests that the National Government provide a place for the criminal insane, or that asylums be built by the larger States, who would receive the criminal insane from the other States at the expense of the States sending them.

In the essay on Hypnotism, Mr. Bell says the medical profession in America do not give the subject the attention its importance deserves, and judicial tribunals are wholly unprepared for the investigation of crimes committed through this influence.

In the essay on Insanity as a Defence in Pennsylvania, a paper written by the District Attorney of Philadelphia County on the subject is criticised.

In another essay he treats of Spiritualism and Testamentary Capacity, stating that if a testator should be controlled in the disposition of his estate by what he believed to be the spirit of a deceased person, it would be the duty of the court to investigate the medium, and if the medium or its family received the benefit of the legacies the element of fraud or undue influence might interfere.

In the essay on Electricity as a Death Penalty, Mr. Bell urges the removal of the scaffold and hangman's rope as a means of administering the death penalty to those convicted of murder, and quotes the reports of committees made to his Society, suggesting substitutes, such as death by electric current, death by hypodermatic or other injection of poison, or death by carbonic-oxide gas injected into a small room, as recommended by Professor Packard, of Philadelphia.

The other essays are on Belgium and Her Institutions for the Insane, showing the admirable way in which such institutions are conducted in that country, and on Lunacy Legislation in New York, recommending that that State have a Lunacy Commission similar to that in Pennsylvania.

The work on the whole is a good one, and offers to the professional man propositions worthy of serious thought, particularly to the lawyer, for the subjects treated of seem to require more the attention of the judge and the lawmaker than of the physician. The legal propositions appear to be accurately and correctly stated, and show careful investigation and study on the part of the author. He has evidently given the topics deep thought, and seems entirely familiar with them.

P. W. M.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL
AND HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

THE USE OF HYPNOTISM AMONG THE INSANE.

MR. GEORGE M. ROBERTSON, having studied the subject with Bernheim, Luys, and Voisin, has made use of hynotism among the female pauper patients in the Morningside Asylum. He finds that the insane are difficult to hypnotize, but by selecting the most sensible and reasonable of the patients, and of those who are excited, only those who are still coherent, success is likely to follow in between one-third and one-half of the cases, without spending, on an average, more than a quarter of an hour over each. He has a decided objection to melancholiacs, except of the simple variety, as their subjective consciousness is so strong, and they are so wrapped up in their morbid ideas that, instead of listening to suggestion and becoming hypnotized, they think all the more of their subjective ideas. Even with cases who can be hypnotized one's success varies greatly, and in an unexpected manner they refuse to become hypnotized. Although most of his patients have gone under fairly deeply, and had no recollection of what happened, still one's control over them is not so strong as over a sane person, for, as their intelligence is not so good, they do not, as a rule, take up suggestions so well, nor do these make so great and lasting an impression upon them. The hypnotic sleep is also much shorter, on account of the morbid excitement from within the brain, arousing the patient, just as in the state of health we may also be awakened out of a normal sleep by a vivid dream. He summarizes its uses as a direct therapeutic agent: 1. In insomnia, succeeding in intractable cases when drugs have not succeeded well. Hypnotic sleep, being more closely allied to healthy sleep than is drugged sleep, must be of great service when the brain nutrition is already bad and the additional effect of depressing drugs is undesirable. 2. As a sedative in excitement, of direct therapeutic value in preventing an outburst of excitement from passing into

mania in a brain in a highly unstable condition. 3. To dispel fleeting delusional states and the minor psychoses by means of verbal suggestions in the hypnotic state, removing these lesser degrees of mental derangement. For the purposes of management it is useful: 1. To overcome the morbid resistance of patients for their own benefit, in making them do what is necessary for their own welfare, in the giving of medicines and the taking of food. 2. As a substitute for restraint in cases of excitement and violence, replacing the mechanical, physical, or chemical, by what may be described as mental restraint. It is, however, here uncertain, and not always possible. Naturally those who expect miracles to result from the employment of hypnotism will be disappointed. It is not believed that it can cure pronounced or advanced forms of mental disease, nor is the writer hopeful of its ever doing good in cases of fixed delusion. No person can reasonably deny the great good that it may do in individual cases, or the fact that in medical hands, legitimately employed with caution, it appears to produce no direct harm; yet even in an asylum, if extensively used, it may increase and strengthen the delusions about hypnotism, and about unseen agencies in general.—*Journal of Mental Disease*, 1893, No. 128, p. 1.

THE IODIDE OF STRONTIUM.

DR. A. MALBEC presents a very complete study of this remedy which appears likely to obtain an assured position in therapeutics. It occurs crystallized in hexagonal tables, very soluble in water, and, when impure, readily decomposing into iodine and oxide of strontium, presenting various colors. Purity and stability are essential, as the iodate is toxic. As the potash salt, the iodide of strontium has a manifest action upon the heart, which can be utilized in affections of the myocardium, in changes at the aortic orifice and in the arteries. It certainly can be used as a substitute for the potash salt, although it may not always be preferred to it. Yet it does not, after prolonged usage, give rise so readily to intolerance, and it will be more readily accepted by a patient suffering from cardiac disease if he should know of the use of the potash salt as a specific for syphilis. It can be prescribed the same way as the potash salt, in the same dose in simple solution in distilled water, or, to avoid the salty taste, in the sweet liqueurs, or in syrup, or that of bitter orange-peel.—*Les Nouveaux Remèdes*, 1892, No. 18, p. 424.

THE TREATMENT OF INOPERABLE MALIGNANT NEOPLASMS BY THE BICHLORIDE OF MERCURY IN OIL.

MR. R. COWAN LEES has used a solution of bichloride of mercury in olive oil in the strength of one to two thousand, injecting twenty minims by means of a hypodermatic syringe provided with a solid-pointed needle, having several orifices at the side of it, thereby allowing the mixture to diffuse through the tissue of the tumor and affording less danger of its being thrown into the circulation. The surface of the skin is previously cleansed with a solution of this oil, one to one thousand, with twelve per cent. of menthol. From his observation of three cases he believes that a powerful check, if not a complete remedy, exists in this method of applying the bichloride.—*The Lancet*, 1892, No. 3607, p. 875.

THE TREATMENT OF HÆMOPTYSIS.

M. COMBY recommends repose, such revulsives as dry cups, sinapisms, poultices of mustard and flaxseed, dry frictions, or with alcohol or the turpentine. For internal medication a pill of ergot, digitalis, and quinine, or ergotine in gooseberry syrup. Direct astringents may be found in subacetate of lead, or rhatany, or perchloride of iron by atomization. Acid draughts, as the sulphuric acid lemonade, are serviceable. The balsams have some reputation, and a combination of benzoin and alum in aqueous solution is of good repute. Opium has great value, but chiefly through its calmative effects.—*La Médecine Moderne*, 1892, No. 46, p. 705.

THE TREATMENT OF CHOLERA AT ST. PETERSBURG.

DRS. FRANK CLEMON and RICHARD SISLEY have written a very readable paper upon the epidemic of 1892. The use of hot baths (twenty minutes, temperature, 104° F.) was found to be of the greatest service; these baths were frequently repeated, and their effect was to greatly improve the pulse and afford the patients a general sense of relief; and, according to Levin, their action on the skin was beneficial in warding off the uræmic coma. Many patients were treated with hot-air baths which could be given with less disturbance to the patient; higher temperature could be borne and they allowed freer action of the sweat-glands. Calomel was freely used; high rectal injections of a solution of tannin, one to two per cent., and in seven cases copious subcutaneous injections of fluid, seven parts of chloride of sodium to the thousand of water. This modification of Cantani's formula caused less pain than the original. The dejecta were all boiled in the special disinfecting apparatus, in closed boilers, by the external application of steam. At the Alexander Barrack Hospital the death-rate was about 27 per cent., and in the Obuchovski Hospital 28 to 29 per cent.—*The Medical Magazine*, 1892, No. 5, p. 471.

THE HORSE-NETTLE (SOLANUM CAROLINENSE).

DR. J. L. NAPIER has used a concentrated tincture of this plant, made by macerating for two weeks the crushed berries in equal parts of whiskey. The dose with which the remedy was begun was a tablespoonful three times a day. In a case of convulsions during pregnancy, these were completely controlled by a teaspoonful of a strong tincture given every three hours. It is not claimed that it will cure all cases of epilepsy, but that if it is intelligently given it will benefit all cases, and cure a large percentage.—*The American Therapist*, 1892, No. 6, p. 127.

ARSENIC AS A PROPHYLACTIC.

MR. C. F. BRYAN quotes Wilks, who calls this substance one of our most important drugs, and asserts that it is a preventive of gout. The tonic influence on the nervous system, and the belief held by arsenic eaters of Styria

that it prevents illness, the statement of Farquharson that it lessens the vulnerability of blood corpuscles, its antiseptic properties, that those who are taking arsenic are insusceptible to vaccination, are facts cited in support of the position assumed by the writer. His observations were limited to persons exposed to the infection of scarlet fever and diphtheria, and during the recent epidemic of influenza, and the results were such that use has been made of this remedy, wherever practicable, during the last ten years. He claims, in fine, that it is a perfect prophylactic in most infectious diseases.—*The Provincial Medical Journal*, 1893, No. 133, p. 9.

THE TREATMENT OF TETANUS.

DR. L. H. PETIT, recognizing the fact that fatal cases of tetanus are met with, in spite of scrupulous antiseptic precautions, corroborates the statement of Verneuil, that the microbe is one of the most insinuating and tenacious; and that of Chauvel, that investigation should be carried out from the standpoint of prophylaxis. The destruction of the focus can be secured by the excision of it, together with the surrounding healthy tissues, or by the amputation of the member above the focus. On the other hand, these measures may be undertaken too late to prevent invasion of the system, and amputation, and even chloroformization, may even precipitate an attack. The neutralization of the virus must be made either in the wound or in the organism. If in the former, cleansing the wound is essential. If in the latter, it is the antitoxines that must be resorted to; but this method does not show entirely convincing results. As the chronic form tends to recovery, remedies which change the acute into the chronic form are indicated. Of the remedies which diminish the morbid symptoms, chloral, in lowering the reflex excitability of the spinal cord, has given the most fortunate results, especially against the asphyxia and the syncope, which are the principal causes of death. This remedy must be administered in large doses, even to three and a half drachms daily, for several weeks. As for Calabar bean, atropine, morphine, cocaine, bromide of potassium, pilocarpine, and chloroform, these are only sedatives permitting the use of a smaller dose of chloral. When chloral has failed, success has been sometimes obtained by paraldehyde, urethane, and acetanilide. Salicylate of soda has been useful, without doubt due to its analgesic action; curare has been more harmful than useful. External medication, as baths, and the application of ice along the vertebral column, should be classed as sedative measures. As for the use of the antitoxine of Cattani and Tizzoni, it appears likely to fall into oblivion, and the question apparently resolves itself into the use of chloral internally and the application of ice along the vertebral column, although the latter may appear dangerous to those who fear every external excitation; and, in addition, absolute immobilization and protection against light and sound.—*L'Union Médicale*, 1892, No. 147, p. 853.

M. VERNEUIL, in the discussion at the French Academy of Medicine, pointed out that the modern experimental researches tend to show that the microbe of tetanus is confined for a more or less prolonged period in the point of entrance—the wound. The treatment consists, then, not in introducing into the wound an antidote, specific or not, of microbial origin or of

a chemical nature, but simply in suppressing the poison by taking away the organ which contains it—that is, amputation or excision of the wounded part. As a matter of fact, a removal of the focus, even if immediate, may not prevent the appearance of tetanus. BERGER, in seeking to give precise indication for the removal of the point of infection, points out that cases differ markedly. In some, when the focus is limited and complete, extirpation is possible—amputation giving better guarantee than excision pure and simple. Tetanus supervening shows that the infection was grave and rapid, and the resultant toxins had become early and widely diffused; here amputation is unavailing, but it appears, nevertheless, to be the most rational means at hand to destroy the point of infection as well as the laboratory where the toxins are manufactured. He criticises the reports of the cases treated by the method of Tizzoni, in that the injections of antitoxine had been employed in conjunction with other medication, as chloral, and with other means, such as amputation; and besides, the method had been employed several times in chronic cases, which of themselves tend toward recovery.—*Bulletin de l'Académie de Médecine*, 1992, No. 49, p. 771.

ON THE TREATMENT OF HICCUGH.

MR. W. LANGFORD SYMES believes that little can be said. Empirical treatment has made use of almost every known drug. The author finds as most efficacious very frequent acts of swallowing raw whiskey, vinegar, “Eau de Mélisse,” hot brandy punch, or a mustard blister over the epigastrium. Antispasmodic remedies comprise chloral hydrate—used with success in the case reported; nitrite of amyl, Calabar bean, cocaine, hydrocyanic acid, atropine, morphine, and nicotine. The physiological treatment depends upon an accurate diagnosis of the conditions under which it occurs, of the constitution in which it is met with, and of the probable nature of the irritation to which the gastric or œsophageal branches of the vagus are subjected—as foreign bodies, accumulations, distention, worms; or specific states of the viscera, such as gout, etc.—each of which must, in turn, become the basis of a distinct and specific treatment.—*The Dublin Journal of Medical Sciences*, 1892, No. 252, p. 488.

[In a patient under observation in hospital service, where nearly every drug recognized as having an anti-spasmodic action had been used in vain, digital compression of the phrenic immediately arrested the paroxysms for nearly two hours; the repetition of the compression caused them to cease entirely.—R. W. W.]

THE TREATMENT OF TUBERCULOSIS BY HYPODERMATIC INJECTIONS OF CREASOTE.

PROFESSOR PETER believes that the hypodermatic injections act favorably only in local scrofula and tuberculosis—that is, precisely in the cases where the older therapeusis was also efficacious. He cites a case where a patient suffering from both a pulmonary tuberculosis and a cold thoracic abscess was treated for thirty days. The amount of five drachms cured the cold abscess and bony lesion, but left stationary the pulmonary disease. The

hypodermatic treatment of creasote is a real advance: it enables the patient to absorb large quantities of the remedy, and diminishes markedly and rapidly the expectoration, the cough, and various general symptoms. Certain cases of tuberculosis are curable, and that without treatment; for example, laborers, who have become tuberculous from overwork and insufficient nourishment, recover after a stay in a hospital; therefore we need not be surprised that creasote will relieve these individuals. According to the tolerance established for creasote, the prognosis can be stated. If this is perfect, we may expect excellent local and general results. Another class is: patients with whom tolerance is also perfect, but in whom the local lesions are as much benefited as the general conditions. A third class of patients bear the remedy well at first, but later intolerance is established; here the prognosis is unfavorable. Those who, from the first, are unable to take the remedy, present a very hopeless prognosis. Thus creasote may show the gravity of the tuberculosis. However, much depends, as to the duration of the disease, upon good digestion and absence of fever, and with these conditions in the patient's favor his life can be assured in spite of the most evident signs of pulmonary tuberculosis.—*La Médecine Moderne*, 1892, No. 54, p. 802.

PNEUMONIA CURED BY THE INTRA-VENOUS INJECTION OF CHLORIDE AND BICARBONATE OF SODA.

DOTT. PELLEGRINI reports a second case where about seven ounces of a three-fourths of a 1 per cent. solution of chloride of sodium with a one-half of 1 per cent. of bicarbonate of sodium was injected intra-venously. This was repeated on the next day. The urinary chlorides, diminished before the injections, increased in amount and returned to the normal on the third day after the second injection. The theory upon which this artificial blood serum is used is, to prevent the danger of the pneumonia—the coagulation of blood in the cavity of ventricles, due to the scarcity of chloride of soda in the organism, shown by the diminution or absence of the chloride in the urine.—*Gazetta degli Ospitali*, 1892, No. 151, p. 1387.

DANGERS OF INHALATION OF SMOKE POWDERS IN THE TREATMENT OF ASTHMA.

DR. J. H. BULLARD calls attention to the silence of the text-books in regard to the danger arising from the use of these powders, which are generally composed of nitre with the addition of chlorate of potassium, powdered stramonium leaves, cubebs, sumbul, benzoin, oil of cassia, lobelia, and perhaps tobacco. It is possible to produce with these an atmosphere so full of narcotic vapors, and so lacking in necessary oxygen, as to produce a gradual asphyxiation, passing into that easy and painless moribund condition oftener seen in poisoning from carbonic acid or illuminating gas. A single fatal case under the observation of the writer is reported. A strong, healthy, hard-working German woman, of thirty-six years of age, died from the inhalation of the fumes, the room being closed; the symptoms were those of asphyxia, which were not relieved by artificial respiration, venesection, strychnine hypodermatically, electricity, external warmth, or frictions.—*The Southern California Practitioner*, 1892, No. 12, p. 471.

THE MEDICAL USES OF COMPRESSED GASES.

DR. CLEMENT B. LOWE cites the uses of oxygen and of nitrogen monoxide. The former produces gain in body weight through the stimulating effects upon the nutrient functions, these effects produced mainly by the increase and stimulation of the red corpuscles, being almost invaluable in asphyxia from poisonous gases, such as carbon monoxide, where the hæmoglobin is at once changed to oxyhæmoglobin. The latter, used largely in dentistry, has recently been shown to be of value in the treatment of nervous diseases, particularly in nervous prostration, insomnia, and melancholia. Since it is now possible to procure the gases in compressed form, they can be kept in stock by pharmacists. In using the apparatus the compressed gas is first conducted into a rubber bag or a metallic gas-receiver, from the former of which it is inhaled under ordinary pressure, the gas passing through a bottle partly filled with water. If it is to be used as an enema, the gas is displaced from the receiver by water flowing from a can placed about twenty-two inches above the receiver, and is passed through a bottle, containing warm water, to the patient.—*American Journal of Pharmacy*, 1892, No. 12, p. 603.

 THE TREATMENT OF CARDIAC AFFECTIONS BY GYMNASTICS AND MASSAGE.

DR. H. HUCHARD considers that too much attention has been directed to the central heart and not enough to the peripheral heart. This is true of the diseases of the heart of arterial origin when the obstacle is not in the central heart, but in the peripheral heart—that is, in the circulatory system. There are two methods in gymnastics—the French and the Swedish; the former has, in health, for its purpose the development of muscle; the latter, in both health and disease, the aiding of suppleness, and especially of the circulation of the muscular system. The latter is really medical gymnastics, improving the peripheral heart. Exercises which dilate the peripheral bloodvessels relieve the heart. From massage and gentle gymnastics in the treatment of cardiac disease of arterial origin we may expect that the patients will lose their cyanosis, their dyspnoea, their œdema of the limbs, while the pulse gains in regularity and force, and the urine becomes abundant and clear.—*Revue générale de Clinique et de Thérapeutique*, 1892, No. 47, p. 741.

 THE TREATMENT OF HYPERTROPHIC CIRRHOSIS OF THE LIVER BY CALOMEL.

DR. LUDWIG SIOR reports a case where he prescribed a grain in single doses, six times daily, at intervals of two hours, continuing thus for three days, when the remedy was omitted for the same number of days; this alternation of periods of use and disuse of the remedy was continued for a month. For the second and third month four daily doses were given, in the same manner as before. In the case reported, cure resulted after about three months of treatment.—*Berliner klinische Wochenschrift*, 1892, No. 52, S. 1327.

MEDICINE.

UNDER THE CHARGE OF

W. PASTEUR, M.D. LOND., F.R.C.P.,

ASSISTANT PHYSICIAN TO THE MIDDLESEX HOSPITAL; PHYSICIAN TO THE NORTHEASTERN
HOSPITAL FOR CHILDREN;

AND

SOLOMON SOLIS-COHEN, A.M., M.D.,

PROFESSOR OF CLINICAL MEDICINE AND APPLIED THERAPEUTICS IN THE PHILADELPHIA
POLYCLINIC; PHYSICIAN TO THE PHILADELPHIA HOSPITAL.

SEQUEL TO A CASE OF TUBERCULOUS PERITONITIS.

MR. LAWFORD KNAGGS (Leeds), before the Clinical Society of London, described the appearances noted at an operation for ventral hernia five and a half years after laparotomy had been performed for tuberculous peritonitis. The case had been recorded in the Clinical Society's *Transactions* (vol. xxi.), and at the first operation the intestines, mesentery, and parietal peritoneum were covered with myriads of pale-pink, gelatinous-looking tubercles, as large as hemp-seeds, thickly and universally distributed. The patient, who had grown into a strong and healthy young woman, reappeared in October, 1891, with an irreducible omental hernia at the site of the abdominal incision. This was successfully operated upon in November. The sac and contained omentum presented nothing unusual in appearance. The omentum that prolapsed through the hernial aperture during the operation was quite healthy. The parietal peritoneum inside the ring felt quite smooth to the finger, and a coil of small intestine, which could be well seen through the opening, was glossy and looked like perfectly healthy bowel. No signs of tubercle nor any evidence of the tuberculous condition that had existed five and a half years ago were detected.

DR. HADDEN (London) mentioned the result of a post-mortem examination in a child whose abdomen had been opened two months before death and found affected with miliary tubercle. No trace of this condition was found at the necropsy, and the glands were not enlarged or caseous.

TUBERCULOUS ULCERATION OF THE PHARYNX.

At a recent meeting of the Medical Society of London, DR. PERCY KIDD showed a case of severe tuberculous ulceration of the pharynx, which had been successfully treated by lactic acid. The patient, a woman aged forty-one years, at the present time showed a large cicatrix on the back of the pharynx; there were still a few small nodules at the site of the scar and at the back of the tongue. She presented signs of pulmonary tubercle at the beginning of the year, and later the throat trouble commenced. Before treatment was begun there was diffuse ulceration of the whole of the back of the pharynx, the surface being pale and gray, dotted with bright-red points like tubercles

and coated with a tenacious secretion. It was intensely painful, swallowing being almost impossible. The surface was thoroughly cocaineized and lactic acid was freely applied, first in a solution of 50 per cent., afterward the pure acid being used. It was only after fourteen applications that evidence of healing was observed; then the pain soon ceased and the improvement rapidly advanced. The most favorable case for this treatment was an ulcer without thickening of the submucous tissue. If there were induration not broken down, the surface should be touched with the cautery and the acid then rubbed in. Great patience and perseverance were necessary to produce good results. The ulcer had not been examined for bacilli, though they were found in the sputum. He had seen four cases cured by the lactic acid treatment, and he referred to one case of undoubted tuberculous ulceration in which a spontaneous cure took place.

ON THE KNEE-JERKS AND PERIPHERAL NEURITIS IN DIABETES.

R. T. WILLIAMSON (Manchester) publishes an analysis of fifty cases. Both knee-jerks absent in 50 per cent.; both knee-jerks present in 38 per cent.; knee jerks feeble, or one absent, in 12 per cent. The state of the reflex varied, returning again after a period of absence in several cases.

Relation to age. Under twenty-five years, knee-jerks absent in 80 per cent.; under thirty years, absent in 75 per cent.; over thirty years, absent in 46.15 per cent. The severer type of the disease in the young is probably accountable for the high percentage of absence of knee-jerk under twenty-five years. The absence of knee-jerk does not appear to bear any relation to the duration of the disease.

Relation to general nutrition. Absence of knee-jerk appears to be more frequent in markedly wasted patients. No relation to the perchloride of iron reaction in the urine (Gerhardt's reaction) could be made out; nor did there appear to be any relation to the amount of sugar passed or to the specific gravity of the urine.

Relation to pathological conditions. "The loss of the tendon reflex cannot be regarded as evidence of the nervous origin of the disease in any particular case, but must be looked upon simply as a complication. In a case of diabetes presenting symptoms of gross lesion of the nervous system, the knee-jerks were present (see *Lancet*, July 9, 1892).

"In another case of mild diabetes, in which a tumor of the pituitary body was found post-mortem, the knee-jerks were present. On the other hand, they were absent in a case following a blow on the head, and in cases having a previous history of great mental worry. The knee-jerks were absent in three cases in which the autopsy revealed marked disease of the pancreas."

Relation of absent knee-jerks to symptoms of neuritis. Out of 12 cases, in 8 there were more or less pain, tenderness, numbness and cramps in the legs; in 4, such symptoms (of neuritis) were entirely absent.

In 2 of the above-mentioned 8 there were marked paralytic symptoms. Of 10 patients whose knee-jerks were present, only 1 suffered from the above symptoms.

In presence of the above symptoms, loss of knee-jerk is probably due to

neuritis; in other cases the cause of its absence is more doubtful, though Charcot believes it to be also due to peripheral neuritis.

In cases in which the knee-jerks were absent during life, examination of the spinal cord has yielded negative results. Eichhorst has recently reported two cases of diabetes with absent knee-jerks in which he found parenchymatous neuritis of the anterior crural nerves.

In some cases the loss of knee-jerk is adequately explained by positive pathological evidence, but in others the clinical facts appear to support the view of a toxic functional cause (probably a condition preceding neuritis).

Prognosis. On the whole, this appears to be less favorable when the knee-jerks are absent.

The author concludes his report with a short account of two cases of diabetes presenting slight symptoms of peripheral neuritis, with a *résumé* of an analysis of sixteen cases by various authors.—*Medical Chronicle*, 1893, vol. xvii., No. 2.

PANCREATITIS WITH HEMORRHAGE.

DAY (*Boston Medical and Surgical Journal*, cxxvii., No. 24, p. 569) reports the case of a medical man, forty-nine years old, who for a long time had been troubled with digestive derangement, which of late years had been aggravated by irregularity of hours of sleep and of meals. Three years before death he was, on one occasion, seized suddenly with an attack of syncope, for twelve hours remaining in a condition of collapse, and gradually recovering after several weeks of debility. For a year his condition had been growing progressively worse, though he continued at his work, using "stimulants" to induce sleep. For a number of months there had been complaint of a feeling of pain and distress in the epigastrium, for the relief of which chloroform was employed topically and sometimes by inhalation. Finally, the man concluded to withdraw from active life and take much-needed rest. Uncontrollable vomiting of undigested food, greenish liquid, and a small quantity of mucus, with violent retching, set in at this time, but at no time was there hæmatemesis. Exquisite tenderness developed in the epigastrium and deep pressure could not be tolerated at all. There was complaint of agonizing pain in the epigastrium and in the right hypochondrium. For a number of months there had been tenderness over the lower ribs upon the right side posteriorly. There was progressive failure, mentally and physically. Much of the time there was delirium. Exertion induced syncope. The pulse, usually abnormally slow, became quick and weak. At no time was there noteworthy elevation of temperature. The bowels were habitually constipated and purgatives were often employed. The stools were at times clay-colored; at other times they presented evidences of the presence of bile. At one time there was decided jaundice, which disappeared after the administration of calomel. Much of the time the conjunctivæ and the skin were muddy. Sweet or sour substances were not tolerated. Vomiting was controlled by the employment of suppositories containing tincture of opium. Slight transient improvement took place. Finally, vomiting and retching suddenly set in, with epigastric pain; collapse occurred and progressed to death.

At the post-mortem examination the stomach appeared to be enlarged; its

walls were thinned; the mucous membrane was injected and was covered with a small amount of mucus. The gall-bladder contained a small concretion of inspissated bile; two other stones were lodged firmly at the duodenal extremity of the common duct, the lumen of which they almost but not quite completely occupied. The head of the pancreas was, perhaps, slightly more dense than usual. The body and tail were enlarged in all dimensions, and abnormally hard and dense, a light chocolate-colored fluid exuding from the surface. The color of the body and tail approached chocolate. On the surface were many dark areas, more or less irregularly round, and from one-half to three-fourths of an inch or more in diameter, on section proving to be conical in shape, and in color and appearance suggestive of altered blood. There were, besides, many smaller, hard and dense, light-gray nodules. The pancreas was submitted to Professors Fitz and Whitney, of the Harvard Medical School, both of whom regarded the condition as one of hemorrhagic infiltration.

The most common prominent symptom of pancreatitis is deep-seated pain in the upper part of the abdomen, radiating upward and backward, often intense and of sudden onset, and sometimes attended with nausea, vomiting, and retching. There is usually little or no elevation of temperature. Emaciation is often extreme. There may, besides, be pallor, restlessness, thirst, rapidity and compressibility of pulse, and heavily coated tongue. When hemorrhage occurs, the symptoms are those of sudden collapse, rapidly progressing to a fatal termination. The condition is to be differentiated from peritonitis from perforation; irritant poisoning; intestinal obstruction.

Pancreatitis may result in suppuration or gangrene.

Recovery may take place, but attacks are likely to recur.

The treatment is as yet palliative. Should suppuration occur, the pus is to be evacuated.

FITZ (*Ibid.*, p. 571) maintains that the multiple at-necrosis frequently found in association with hemorrhagic and gangrenous pancreatitis is secondary to the latter, and suggests the possibility of a decomposition of the neutral fat in the cells into the fatty acids, which combine with lime to form the crystals found in the necrotic nodules.

NOYES (*Ibid.*, p. 572) states that the appearance of fat in the alvine dejections is a valuable sign of pancreatic disease, both in cases in which constipation exists as well as in those in which there is diarrhœa. The amount of fat appearing in the dejections may exceed that which has been ingested; it is said even that oleaginous material has continued to appear in the stools after all fatty matter had been excluded from the diet. An inability to digest oleaginous, saccharine, and amylaceous articles of food should suggest pancreatic disease. Free fat occasionally appears in the urine in case of disease of the pancreas. In a certain proportion of cases of pancreatic disease sugar appears in the urine.

PRIMARY CARCINOMA OF THE COMMON CHOLEDOCH DUCT.

MAY (*Münchener medicin. Wochenschr.*, 1892, No. 33, p. 590) has recorded a case of primary carcinoma of the common choledoch duct, with secondary miliary nodules in the liver. He was able to find reports of but nine other

similar cases. The patient, an official, sixty-seven years old, gave a history of having suffered from attacks of "renal" colic. He had been an eager sportsman and able to endure a good deal of physical exercise. Following an attack of influenza the man had cough and catarrhal symptoms, with paroxysms of shortness of breath, particularly at night. He was a hearty eater and indulged with moderate freedom in malt liquors. The bowels were rather torpid. Several months later slight jaundice appeared. The heart was found enlarged; its action was irregular; the pulse was arrhythmic, small, and compressible; the radial vessels were slightly atheromatous. The urine was scanty, of high specific gravity, and contained neither albumin nor sugar. The spleen was not enlarged. The area of hepatic percussion-dulness and the sense of resistance were somewhat increased. Powdered digitalis leaves, gr. $\frac{3}{4}$ thrice daily, were prescribed. In the course of the next few days signs of hemorrhagic infarction at the base of the right lung appeared. The dose of digitalis leaves was increased to gr. jss, with decided amelioration of the symptoms.

In the next few months strophanthus was given alternately with the digitalis, and there was little change in the man's condition. Some time later progressive impairment of appetite set in, until there was actually disgust for food, particularly for meat. At the same time there was notable loss of flesh and strength. The enlargement of the liver was found to have increased, and the jaundice had grown more intense. The urine contained conspicuous amounts of biliary coloring-matter, and the stools were clay-colored and offensive. Dyspnoea returned and insomnia was troublesome. There was no tenderness in the right hypochondrium, neither spontaneously nor upon pressure. Some relief was afforded by the employment of digitalis and the institution of mechano-therapeutic measures. A sense of chilliness was readily induced, with slight elevation of temperature. Emaciation progressed; jaundice persisted. To the other symptoms general anasarca became added. Sopor developed; Cheyne-Stokes breathing appeared; slight tenderness in the right hypochondrium became evident. Finally, intense abdominal pain suddenly occurred, with vomiting of dark-colored matter; the abdomen became distended and extremely sensitive; the temperature was elevated; and progressive collapse was followed by death. The post-mortem findings included an annular growth, as large as a cherry, at the entrance of and occluding the common choledoch duct at its entrance into the duodenum, partially projecting into the bowel, and on microscopic examination proving to be a cylindric-celled carcinoma. The biliary passages were dilated and contained gall-stones, which had caused ulcerative perforation of the gall-bladder, with purulent peritonitis. The liver contained a moderate number of metastatic nodules.

In none of the cases of primary carcinoma of the common choledoch duct reported was the diagnosis made during life. In most the duration of the disease was from four to eight months, and death resulted from intercurrent pneumonia. Seven of ten cases occurred in males; two in females; in one the sex was not mentioned. In all cases the most prominent symptoms were persistent, intense jaundice; rapid loss of strength, without apparent cause; and obstinate digestive derangement. In one case the patient was forty-three years old; in all of the others the patients had passed the fiftieth year. Cheyne-

Stokes breathing, sopor, and other cerebral symptoms are to be ascribed to cerebral œdema.

A GAS-GENERATING BACILLUS IN THE URINE OF A CASE OF CYSTITIS.

HAVING observed a peculiar sulphurous odor about the urine of a case of compression-mylitis, with incontinence of urine and cystitis, SCHOW (*Centralbl. f. Bakteriöl. u. Parasitenk.*, xii., 21, p. 745) made a careful study of the secretion. The urine was feebly acid, rather turbid, and deposited a moderate sediment, which consisted of vesical epithelium, colorless blood-corpuscles, and bacteria. A small quantity of the urine, obtained with suitable precautions, was mixed with some meat-infusion peptone-gelatin, and plates were cast. Three varieties of colonies developed, of which two proved to be identical. One of these gave rise to the production of gas. The organisms were short, plump, motile rods, in appearance somewhat resembling both bacilli and cocci and stained with the ordinary aniline colors, and were not decolorized when treated by the method of Gram. They developed also upon agar-agar, upon potatoes, upon coagulated egg-albumen, in bouillon, and in sterile urine. A peculiar aromatic odor was apparent in most of the cultures. In the urine it was evident that alkali was produced as a result of the growth of the organism. From an analysis of the gas generated the conclusion is reached that it was carbon dioxide. After the patient had been subjected to an antiseptic plan of treatment the cystitis subsided and the bacilli could no longer be found. Injection of an infusion of the bacilli into the bladder of a dog, with temporary ligature of the urethra, was followed by the development of cystitis, the bacilli being also found in the urine. The name *coccobacillus ærogenes vesicæ* is proposed for the organism.

TUBERCLE-BACILLI IN THE LYMPHATIC GLANDS OF NON-TUBERCULOUS PERSONS.

To ascertain if tubercle-bacilli were present in the lymphatic glands of non-tuberculous persons, PIZZINI (*Zeitschr. f. klin. Medicin*, xxi, 3 u. 4, p. 329) inoculated guinea-pigs, some through the peritoneum, and some through the subcutaneous connective tissue, with portions of the bronchial, mesenteric, or cervical glands obtained from forty subjects in which death had occurred from acute disease, or as the result of accident, and from which tuberculosis could be certainly excluded. As a matter of course, the most scrupulous attention was paid to antiseptic detail, and the avoidance of all sources of contamination. For various reasons only the results obtained in thirty of the subjects were considered available. It was found that in 42 per cent. of cases tubercle-bacilli were present in the lymphatic glands. This observation is assumed to prove that, under certain circumstances, the tubercle-bacilli, after having passed the epithelial lining of the air-passages, are destroyed by the phagocytes; under other circumstances the bacilli give rise to primary tuberculosis of the lymphatic glands, which subsequently becomes generalized; while in most cases the bacilli remain quiescent in the glands, especially in the bronchial glands, preserving, however, their virulence. The special proclivity of the bronchial glands is probably dependent upon the fact that tuberculous infection most commonly takes place by the air-passages, and upon the

situation and the anatomic and physiologic relations of the bronchial glands. In no case was the presence of tubercle bacilli in the mesenteric glands demonstrated. In two cases tubercle bacilli were found in the Pacchionian bodies. It is also concluded that too much stress is not to be laid upon the sources of tuberculous infection, but more upon the resistance of the tissues. The greatest importance is attached to the condition of the blood, for if this become deteriorated the conditions are rendered more favorable for the multiplication of the bacilli already present in the glands, to be followed in turn by general infection.

ARTERIAL THROMBOSIS FOLLOWING INFLUENZA.

LEYDEN (*Deutsche medicin. Wochenschr.*, 1892, No. 45, p. 1009) has reported the case of a girl, twenty years old, in which, four weeks after an attack of influenza that kept the patient in bed a week, a suppurating angina appeared. A week later, in the morning on arising, she felt a sharp pain in the left hand, which toward evening was observed to be pale. In the course of a few days, the pallor had given way to cyanosis, with which was associated a sense of coldness and weakness. The discoloration extended to the forearm and to the lower third of the arm, and swelling became superadded. There was some pain and some retardation and enfeeblement of movement. There appeared to be slight hyperæsthesia. It was found that the left radial pulse was absent at the wrist; neither could pulsation be felt below the middle third of the arm; while below, a cord-like mass could be made out. On physical examination no lesion of any organ could be detected. The urine contained neither albumin nor sugar. There was an absence of febrile symptoms. The family and personal history was good. For several days the thrombosis extended and the symptoms became more pronounced; but subsequently the conditions moderated, until perfect recovery finally ensued, the occlusion of the brachial artery, however, persisting and a collateral circulation being established.

A second case is reported as having occurred in a medical man, fifty years old. Shortly after an attack of influenza, symptoms of occlusion of the popliteal artery appeared, for the relief of which amputation became necessary. After a protracted convalescence, retarded by numerous complications, the patient ultimately recovered. In this case also there was no cardiac lesion, and the family and personal history was good.

Leyden is unwilling to admit that these two cases are instances of marantic thrombi. He would prefer to believe that the condition is to be associated with a breaking down of the colorless blood-corpuscles that takes place during the febrile stage of the disease and later.

Reference is made to other cases of a similar character.

DIMINUTION IN THE SIZE OF THE LIVER (ACUTE YELLOW ATROPHY) WITHOUT DIMINUTION IN THE AREA OF HEPATIC PERCUSSION-DULNESS.

GERHARDT (*Zeitschrift f. klin. Medicin*, xxi., 3 u. 4, p. 375) has reported the case of a woman, thirty-one years old, who had had scarlatina in childhood, but no other disease. For a number of years there had been complaint of

gastric derangement, loss of appetite, and nausea. Without known cause the woman was overtaken by weakness and compelled to go to bed; and jaundice developed. Vomiting of undigested food took place. The urine contained bilifulvin, biliary acids, hyaline tube-casts, and bile-stained renal epithelial cells; on heating and evaporating a large quantity of crystals of tyrosin and of urea could be demonstrated. The stools were pale. The red blood-corpuscles at once assumed the form of thorn-apples and displayed no tendency to group in rouleaux. The colorless corpuscles were somewhat increased, but did not present the polynuclear form. Glycerin-agar inoculated with the blood remained sterile. The abdomen was somewhat distended. The area of hepatic percussion-dulness was not altered, and remained unchanged. The spleen was not palpable, and manipulation occasioned no pain. The sensorium became dulled; the patient became delirious; a systolic murmur became evident at the apex of the heart; a coarse macular eruption covered the body, except on the face; the patient grew worse, and death ensued. At the post-mortem examination fatty degeneration of the muscular tissue of the heart was found; there was parenchymatous nephritis and chronic perimetritis. The liver was in places adherent to the diaphragm; the organ was diminished in size, and weighed less than two pounds, it was soft, and its capsule was cloudy; the parenchyma was of a yellowish color. The diagnosis was acute yellow atrophy. It could not be definitely learned that the woman had taken phosphorus or other poison, but it was suspected that she had swallowed the heads of matches. The failure of correspondence between the results of percussion and the actual size of the liver is explained by the fact that ordinarily, in cases of acute yellow atrophy of the liver, the organ becomes soft, and falls to the posterior portions of the abdomen, the bowel taking the place of the liver. This condition was prevented in the present instance by the adhesions that had formed between the liver and the diaphragm. Under other circumstances the area of hepatic percussion-dulness may be diminished in consequence of the colon taking a position in front of and above the liver.

SUPPURATIVE PYELOPHLEBITIS FOLLOWING APPENDICITIS.

At a recent meeting of the Berlin Medical Society, EWALD (*Deutsche medicin. Wochenschr.*, 1892, No. 45, p. 1019) reported the case of a man, twenty-six years old, who for three weeks had presented headache, diarrhoea, eructations, and vomiting. The appearance was cachectic and the spleen was enlarged, but there was no other symptom of enteric fever. Physical exploration disclosed no affection of heart or lungs. The evening temperature reached 104° F.; the morning temperature fell below normal. Plasmodia malariae were not found in the blood. On the fifth day the epigastrium became sensitive and the liver enlarged. A rigor occurred; the abdomen became distended; and pain at the shoulder-blades was complained of. No tumor of the liver could be detected. There was no jaundice. Tuberculosis was excluded by the absence of pulmonary involvement, of diffuse abdominal pains, of enlarged lymphatic glands, and by the character of the stools. The increase in the size of the liver, together with the localized painfulness, pointed to abscess of the liver; and the development of ascites constituted evidence of

interference with the portal circulation. Repeated puncture of the liver, however, failed to reveal the presence of pus; neither was there anything in the history that could be made responsible for the formation of an abscess of the liver. At the post-mortem examination a perityphlitic abscess was found, in the midst of which the perforated vermiform appendix was present. From the abscess and through the superior mesenteric vein a suppurative phlebitis had been transmitted to the portal vein in the transverse fissure of the liver. The spleen was enlarged. It was apparent that the pyelophlebitis had not developed immediately after the perityphlitis, but that the two processes had been separated by a considerable interval of time.

A CASE OF CHRONIC INTERSTITIAL PANCREATITIS.

ROSENTHAL (*Zeitschr. f. klin. Medicin.*, xxi., 3 u. 4, p. 401) has reported the case of a girl, sixteen and a half years old, without hereditary predisposition or previous acute illness, who, for a year, had been anæmic. More recently there had been notable wasting. Attacks of weakness, with syncope, were frequent, and diarrhœa occurred from time to time. It was stated that the skin was sometimes yellow. The abdomen became enlarged; the frequency of breathing increased; the pulse accelerated; the temperature was 100° F. There was diffuse bronchitis. The heart presented no lesion. The urine was normal. The area of hepatic percussion-dulness was increased. The abdominal veins were enlarged, and there was evidence of the presence of a considerable effusion in the peritoneal cavity. Jaundice was absent. The spleen was not enlarged. On five different occasions it became necessary to perform paracentesis abdominis, large quantities of fluid being evacuated, the accumulation, however, rapidly recurring. Œdema of the lower extremities developed, and eventually the patient died. Throughout the illness there had been practically no fever. The pulse had been small and frequent. While under observation the skin assumed a yellowish color. Rapid emaciation was a notable feature. There was especial complaint of headache and abdominal pain. At the post-mortem examination a moderate accumulation of fluid was found in the peritoneal cavity. The head of the pancreas was unduly firm, and on microscopic examination presented an increase in the interstitial connective tissue, with accumulations of round cells in dilated lymphatics. In the neighborhood of the head of the pancreas the portal vein was partially thrombotic. The liver was enlarged, firm, and smooth. The central veins of the lobules were occluded by thrombi, and the adjacent cells had undergone atrophy. At the base of the right lung were a few areas of broncho-pneumonia. The kidneys presented no change. The heart was small, the right ventricle dilated; the muscular structure was pale and brown; the valves and orifices were free and competent. There was no disease of the lymphatic glands, and nowhere could a neoplasm be found. Although no history of syphilis could be obtained, the absence of any other possible cause of the changes in the pancreas, and the presence in the organ of the evidences of proliferating lymphangitis lead to the conclusion that the morbid complexus was dependent upon late congenital syphilis.

SURGERY.

 UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

 PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA SURGEON TO THE
 UNIVERSITY AND GERMAN HOSPITALS;

ASSISTED BY

ALFRED C. WOOD, M.D., AND C. L. LEONARD, M.D.,

 INSTRUCTOR IN CLINICAL SURGERY, UNIVERSITY ASSISTANT INSTRUCTOR IN CLINICAL SUR-
 OF PENNSYLVANIA; ASSISTANT SURGEON, GERY IN THE UNIVERSITY OF
 UNIVERSITY HOSPITAL. PENNSYLVANIA.

 THE NECROSIS OF FATTY TISSUE AFTER SURGICAL OPERATIONS.

PITSCHKE (*Centralblatt für Chir.*, 1892, No. 43) reports two cases in which, after excision of the shoulder joint, fistulæ persisted; and after the patients had been allowed the use of their arms, there was necrosis of the fatty tissue of the axillary region. The discharged masses of fat were of normal consistence and appearance; there was no change apparent on microscopical examination, except that the bloodvessels were empty. In neither case was there bone-necrosis, but one small splinter being discharged. The author believes that this must be called a true necrosis, caused by mechanical irritation and anæmia. A thermic origin was untenable. Possibly there was a chemical cause through the entrance of air into the wound. There was an absolute increase over the normal amount of fatty tissue in the region, in the case of the first patient, which probably indicates a new growth during the periods of quiescence. The chief lesson to be drawn from these cases by the surgeon is, that in all cases fatty tissue that has been crushed or irritated during operation should be removed, and that this form of necrosis may be the cause of persistent fistulæ.

 ERYSIPELAS OF THE BLADDER.

V. FRISCH (*Internat. klin. Rundschau*, October, 1892, No. 44) reports the following interesting case, in a patient fifty-two years old, whom he had had under observation and treatment in successive attacks of abscess in the prostate for some time. The patient entered the hospital with one of his usual attacks, but after its symptoms had disappeared there remained a fever that could only be accounted for by the presence of pus, albumin, and a few streptococci in the urine, while the prostate and bladder were sensitive to pressure. Upon the third day, after a severe chill, there appeared upon the left leg a spot the size of an almond, which presented the characteristics of an erysipelatous eruption, and caused the author to conclude that he had to deal with an erysipelas of the vesical mucous membrane, originating in or caused by the abscess of the prostate. This diagnosis was confirmed by the bacteriological investigation of the urine, the streptococci of erysipelas being recog-

nized both in the plate-cultures and by their characteristic growth in the "stick" cultures, and by their reproducing the disease after inoculation.

These bacteriological evidences in the urine increased and then disappeared with the course and termination of the disease in the bladder. The cystoscope showed the mucous membrane deeply red in color, and raised in great folds over its entire surface during the height of the disease. The skin eruption was metastatic—probably through the bloodvessels; this was shown by its origin on the lower leg, far from the original seat of the disease, and by its second appearance on the chest, after having passed over the entire posterior surface of the body and apparently subsided. The patient made a good recovery.

THE PREVENTION OF INTESTINAL ADHESIONS AFTER LAPAROTOMIES.

The frequent and rapidly multiplying cases in which adhesions after laparotomy have led to enteritis and even stricture of the intestine, leads V. FREY (*Wiener klin. Woch.*, October 27, 1892, No. 43) to advise that in all cases of wounds of the peritoneum special care should be taken to close them, and, leaving out of consideration those wounds to which the ordinary plastic methods are applicable, he suggests the following method for the closure of wounds in the parietal peritoneum: The peritoneum on one side of the laceration is dissected up sufficiently to allow its union with the sound peritoneum on the opposite side, where it is fixed with interrupted sutures; in case this occurs at the site of the primary incision, the dissection should be made on the sound side, this "leaf, as of a book," being sutured to the opposite side, beyond the point of laceration.

A CASE OF GASTRO-ENTEROSTOMY.

RECLUS reports in *Le Mercredi Médical*, 1892, No. 42, a successful case of gastro-enterostomy in a case of cancer of the pylorus. The patient was a woman, aged fifty-one years. The first symptoms of her trouble manifested themselves nine months before coming under the observation of the author. Examination revealed a large tumor in the abdomen to the right of the median line. Vomiting occurred two or three hours after taking food. The stomach was greatly dilated; almost nothing passed from the bowel. There were extreme emaciation and feebleness, and death seemed imminent. In spite of the unfavorable outlook, anastomosis between the stomach and jejunum was performed. Improvement was rapid after the third day, and two months later the patient remained free from symptoms. She ate heartily and the bowels were moved regularly.

On account of the excessive vomiting following the chloroform anæsthesia, the author will in future cases use cocaine for the abdominal incision, after which no pain would be experienced. In three gastrotomies the local use of cocaine was entirely satisfactory.

The additional anastomosis between the duodenum and jejunum, as recommended by Jaboulay, the author considers useless and dangerous. Of nine cases of gastro-enterostomy performed in France the early part of this year, eight recovered. These statistics have placed the operation in greater favor than it formerly enjoyed.

LATERAL DEVIATIONS OF THE SPINE IN POTT'S DISEASE WHICH MAY SIMULATE SCOLIOSIS.

KIRMISSON states (*Revue d'Orthopédie*, 1892, No. 6) that the possibility of lateral curvature of the spine in Pott's disease is too generally overlooked. Of one hundred and twenty-three cases of this disease examined by him, in eighteen instances there was associated with the angular deformity more or less lateral deviation, while in six other cases of well-marked caries the lateral deformity existed without any angular curvature. Thus in nearly one-fifth of the cases there was lateral curvature, either separate or combined with the classical angular projection.

Cases presenting the antero-posterior deformity are usually diagnosticated without difficulty, but where the lateral curve only exists great care is to be observed in eliciting all the features of the affection. There is not apt to be pain in scoliosis, therefore marked sensibility to pressure on the spinous processes would argue for Pott's disease. We have seen rapid increase in the deformity in the latter affection, in five or six weeks; this does not occur in scoliosis. The pronounced inclinations of the trunk are due to contraction of the lumbar muscles, which does not occur in idiopathic lateral curvature. When enormous lateral deviations are observed in addition to other signs of spine disease, the iliac fossæ should be palpated in order to determine whether or not an abscess has formed. Torsion is associated with scoliosis, while the inclination of the trunk *en masse* is especially characteristic of Pott's disease.

Therapeutically Kirmisson has noted, in common with other observers, that the lateral deviation in disease of the spine has a greater tendency than the other form to improve or entirely to disappear under horizontal decubitus. Vertical extension only exaggerates the muscular contraction. If jackets are employed, they should be applied while the patient is in the genu-pectoral position, suspension being undesirable for the reason just mentioned.

INGUINAL HERNIA IN THE FEMALE.

BERGER relates (*Le Mercredi Médical*, 1892, No. 44) the following case of encysted hernia: The patient was a woman upon whom he was performing an operation for the radical cure of an imperfectly reducible left inguinal hernia. On cutting down he entered a serous sac closed on all sides, through the transparent wall of which a portion of omentum was plainly visible. The omentum was exposed by a further incision and resected, and the sac dissected. The latter was intimately connected with the round ligament, but could be isolated from it. The wall separating the hernia from the first cyst could not be separated into two layers. The author states that the hernia was surely congenital, and is to be explained in the same manner as the infantile hernias of the vaginal tunic in the male, at least as regards the congenital variety. Berger believes that in some instances these hernias are acquired. A case is related in which the author operated upon a boy, seventeen years of age, in whom an encysted hernia was unaccompanied by fluid. Some authorities have held that fluid is always found in the sac of these hernias.

Reclus operated on a woman with a tumor in the labia majora as large as

the head of an adult. There was absence of impulse on coughing, and the enlargement was thought to be a simple hydrocele, but it was found to contain omentum. Other cases are cited by Routier and Tuffier.

ON PARASITIC PROTOZOA IN CANCEROUS TUMORS.

RUFFER (*British Medical Journal*, 1892, vol. ii.) states that since the publication of the first note on the same subject, by Mr. J. Herbert Walker and himself, they have been able to further confirm the opinion expressed at that time. Additional evidence is furnished by the observations of Sawtschenko in Germany, of Foà in Italy, and of Soudakewitch in Russia, all of whom have found the parasites in carcinomatous tumors.

The present communication describes what has been observed for the first time, namely, the *intra-nuclear* stage of the parasite. The protozoa first appear in the nucleus of the cancer cell as hard, dark-staining, small, spherical bodies, almost indistinguishable from the nucleolus of the cell. They scarcely ever occur singly, but are found in groups of two, three, or more, sometimes as high as twenty. When filled with these spores, the nucleus appears as a hard, dark-brown mass with irregular outlines. As the organism develops it becomes more transparent, and later a dainty, small nucleus appears in the centre of each parasite, the surrounding capsule at the same time becoming distinct. Occasionally one parasite increases in size at the expense of its fellows. The parasites gradually approach the periphery of the nucleus and make their escape in the surrounding protoplasm, at the same time increasing in size. The most numerous instances of this intra-cellular stage of the parasite were found in an extremely soft and fast-growing cancer of the breast. Fragments hardened in osmic acid solution and in Fol's solution revealed the presence of the protozoa best.

THE SURGICAL TREATMENT OF PERITYPHLITIS.

VON BERGMANN, in a recent lecture (*St. Petersburger medicinische Wochenschrift*, 1892, No. 41), called attention to the confusion which exists in the classification of inflammations about the cæcal region. It is necessary to distinguish more carefully between typhlitis and perityphlitis than has heretofore been done. Cases called perityphlitis that recover after expectant treatment have been either cases of typhlitis, and should be so placed, or acute attacks of chronically inflamed vermiform appendices, which do not go on to perforation. Typical cases of typhlitis will rarely require surgical treatment unless there is obstinate constipation or ulcerations of the bowel. In describing affections of this region, that name should be used which will indicate the seat of the original trouble. When doubt exists in regard to the diagnosis, much information can frequently be gained by examining the patient under an anæsthetic.

In one hundred sections for perityphlitis, Weir found the vermiform process perforated in eighty-four instances and the seat of inflammation three times. Einhorn found the appendix diseased ninety-one times in one hundred sections for perityphlitis. Matterstock, in one hundred and forty-six operations in

adults, found the process diseased one hundred and thirty-two times, and in forty-nine children in thirty-seven cases.

The earliest sign of an abscess is a positive indication for operation. In intra-peritoneal abscess, the possibility of multiple foci must always be borne in mind. If there is an extra-peritoneal abscess, it probably communicates with an intra-peritoneal collection. The radical excision of the vermiform process is to be done in the intervals between attacks. Cases of general peritonitis are unfavorable for operation, and one is justified in declining this measure.

SENILE TUBERCULOSIS.

After a discussion of several cases of this form of tuberculosis and the different phases under which it makes its appearance, MARSH (*Lancet*, No. 3581) gives the following as the clinical points of value in the diagnosis of these conditions: The diagnosis is to be made from osteo-arthritis. In spinal involvement, an angular curvature points almost conclusively to tuberculosis, but is only available in the dorsal region and must not be regarded there as absolutely pathognomonic, while in the cervical region angles and curvatures are often present, due to entirely different causes. Pain is no trustworthy guide. Swelling varies in amount in some cases; in the knee, wrist, and elbow it is slight; but in other situations it is much more marked, and is due to the pulpy thickening of the synovial membrane. It seems to be a symptom upon which some stress may be laid. Stiffness is not a reliable sign. Two important symptoms of senile tuberculosis are dusky congestion of the skin and increase of the temperature of the part. The one event, however, which may be regarded as very nearly conclusive is the occurrence of suppuration. In the case of glands, the diagnosis lies between malignant disease and senile tuberculosis, and suppuration would point to the latter, although it has been known to occur as a complication of malignant disease. In some cases the family history might be of assistance in the diagnosis, but it is usually no safe guide. The presence of phthisis in the lungs, however, would point strongly to tuberculosis. He says little of prognosis and treatment. Prognosis is usually unfavorable; the disease shows a strong tendency to advance and extend. The treatment should be as in younger subjects—rest, attention to general health, with evacuation of any purulent formations; and in some cases amputation of the limb even where phthisis exists to a marked extent. The operation in his cases has been followed by kindly, rapid healing; and if chloroform be used, he believes the danger to the patient is not as great from the operation as the condition without surgical intervention.

ILEO SIGMOIDOSTOMY (SENN'S METHOD).

LITTLEWOOD (*Lancet*, No. 3581) reports a successful operation in a case of intestinal obstruction due to malignant disease of the hepatic flexure of the colon, with recovery in twenty-three days after operation. He also suggests a modification of Senn's plates, with the idea of (1) doing away with the four stitches attached to the upper and lower margins of the apertures of the plates, which perforate the whole thickness of the intestinal walls; (2) of performing the operation more quickly; (3) of insuring a good opening between the two

pieces of intestine. The suggested modification is to fix a tube of decalcified bone into the aperture of one of the plates, so adjusted that it should fit accurately into the aperture of the other; by this method the two plates could be held together and the two parts of the intestinal walls between them brought evenly into contact with each other. The two plates are secured together by means of two fine silk ligatures attached to their central margins. The intestinal walls about their outer margins should, nevertheless, be attached by a few sutures.

CHANCRE OF THE LIP.

PAGET, in an abstract from the literature on this subject (*Lancet*, No. 3581), concludes that chancre of the lip is commonest in the young and middle-aged; as common on the upper as on the lower lip; and as common in women as in men. In infants it often passes undetected, and the disease is considered to be hereditary. Chancre is rapid; its seat is often dark and rupial; the lip is often red, swollen, and stiff; it is seldom destructive, painful, or fetid. The glands in chancre swell in a few days; they rapidly attain a great size, yet are still loose, movable, distinct, true amygdaloid glands. Mercury will put an end to doubt. The microscope has been used with success; in two cases a suspicious sore was thus shown to be only the infiltrated granulation tissue of a chancre. But the surest guide of all in doubtful cases is the state of the glands. As regards prognosis, the disease will probably run its usual course, neither more nor less. Besides the usual treatment, the sore should be securely covered and the patient warned that he is a source of danger to all about him.

ALBUMINURIA IN VENEREAL AFFECTIONS.

GÉRAUD (*Archiv. de Médecine et de Pharmacie Militaires*, 1892, No. 10) states that in his experience one-third of the cases of old urethritis presented albuminuria. Balzer and Souplet found albuminuria present twelve times in one hundred similar cases. Albumin is not found in the urine in acute inflammation of the urethra before the discharge is established, and is absent if the secretion is suddenly checked. During the flow a small amount of albumin is present in the urine, but it is usually insignificant. If the quantity is marked, the kidneys are probably diseased. Of thirteen cases of double epididymitis reported by Géraud, nine had a notable quantity of albumin in the urine. This was undoubtedly due, according to the author, to ascending pyelo-nephritis.

In syphilis albuminuria is of more frequent occurrence. Géraud noted its presence 11 times in 23 cases of the primary disease; 8 times in 14 cases of secondary syphilis; and twice in 9 cases of the tertiary form of the disease. All of these patients were between the ages of twenty and thirty years. In four of the cases reported the albuminuria preceded the roseola, and in seven other cases it accompanied or followed the eruption. In two cases presenting suspicious ulcers, the diagnosis of syphilis was made before the appearance of the roseola, on account of finding albumin in the urine. The amount is always small, and disappears sometimes under milk diet and liberal draughts

of Vichy. The internal administration of iodide of potassium and mercury causes a diminution or disappearance of the albumin. Mercury alone was likewise efficacious. If the internal medication was stopped more than fifteen days the albumin reappeared.

Géraud believes that albuminuria in primary syphilis is analogous to that which occurs in the acute infectious diseases. Albuminuria occurring after the administration of mercury must be classed as a toxic affection, or due to kidney degeneration, while that which appears in the tertiary stage is due, no doubt, to alteration of the blood without kidney lesions.

THE SOLUTION OF A URIC ACID VESICAL CALCULUS BY EMS WATER.

ARONSON records in the *Berliner klinische Wochenschrift*, 1892, No. 41, the case of a man aged seventy-two years, who had been under the treatment of different physicians during a period of twenty-one years for gravel and bronchial catarrh. Professor Schönborn detected a stone of small size, almost surely uric acid, in the bladder. Later, the patient consulted v. Langenbeck, who also found a stone about the size of a hazel-nut. As operation was refused, Langenbeck sent him to the Ems Springs. After using the water four or five weeks the stone could not be found. He was examined seven years later, and still no evidence of the stone was manifest.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

SUPPURATION IN THE MAXILLARY SINUS.

As the result of twenty-eight cases of surgical treatment of empyema of the antrum, DR. O. CHIARI, of Vienna, comes (*Prager med. Woch.*, 1892, No. 24) to the following conclusions:

1. In very rare instances empyema due to periostitis of the roots of the teeth may be cured by extraction of the diseased root alone.
2. Assiduous syringing of the nose may produce decided improvement.
3. Injections into the antrum, even when systematically and thoroughly made, often fail to cure, though they usually produce improvement. In one of the cases narrated, however, a marked increase of suppuration was noted.
4. A few injections produce a cure only in cases of recent suppuration, the result of dental periostitis.
5. Successful injection through the orifice of the sinus, so that pus escaped with the liquid injected, succeeded only in one case.
6. Systematic injections are practised readily and properly only from the

alveolar process. Injections through the lower nasal meatus are very troublesome, and are usually too severe for the patient.

7. Insufflations of iodoform powder give no satisfactory result.

8. During all these therapeutic measures the antrum must be shut off from the mouth.

9. The best results follow tamponings with iodoform gauze, which very quickly subdue the suppuration, need changing but once a week, are readily made, and effectually close the antrum from the mouth.

10. For purposes of tamponing, an opening 4 to 6 mm. wide is usually made from an alveolus. Openings through the canine fossa are indicated only when there has been an opening made by the disease, or when the patient refuses to sacrifice a tooth, or when an extensive scraping of the antrum is requisite. Tamponade by way of the canine fossa is the more troublesome and painful.

MORBID GROWTHS IN THE NASAL PASSAGES; FIBRO-SARCOMA.

DR. JUAN CISNEROS, of Madrid, reports (*Arch. Internat. de Rhin., Lar.*, etc., 1892, No. 14) a case of primitive fibro-sarcoma in a man forty-six years of age. It was quite large, occupying an entire nasal fossa, and was attached solely to the cartilaginous portion of the septum. It was removed by electro-caustic section without much hemorrhage. New vegetations soon sprouted, which were removed with forceps, and cauterized electrically at their bases. Nevertheless, a recurrent growth soon acquired large dimensions. The parts were then exposed by external access. The neoplasm was thoroughly removed, its points of implantation scraped and then cauterized. Recurrence soon ensued again. Fresh evulsion and cauterization were again followed by like rapidity of recurrence. The whole cartilaginous septum was then extirpated, and there was no further recurrence.

PEMPHIGUS OF THE ORAL AND PHARYNGEAL MUCOUS MEMBRANE.

DR. MANDELSTAMM, of Kiew, discusses (*Berlin. klin. Woch.*, 1892, No. 49) the symptoms and differential diagnosis in cases continuing for some time without bleb-formation or simultaneous cutaneous manifestations, and where this eruption presents as a forerunner of pemphigus of the skin. During the course of several weeks, or months, there is formed on the mucous membranes of the mouth, tongue, pharynx, and even the larynx, numerous patches of white or whitish-gray deposits, varying in size from a lentil to that of a ten-cent piece, or even larger, which look very much like the pseudo-membrane of diphtheria. Some of them disappear quickly without traces. Others remain for a long time, and often become confluent, and these usually become thinner in various places, and reveal punctiform and larger red, and often dry and sometimes bleeding, segments of mucous membrane beneath. The surrounding mucous membrane is normal, or, at most, slightly œdematous.

There is no elevation of temperature, and no constitutional disturbance other than that produced by dysphagia, which prevents the glutition of proper nourishment.

The disease resists all treatment, sometimes for months. Salivation and fetor are present, as in several other diseases of the same region.

AN ACCESSORY TONGUE.

AN accessory tongue 2.4 centimetres in length and 8 millimetres in breadth, forming a tumor on the base of the tongue of a lad twelve years of age, and situated immediately in front of the angle formed between the two rows of circumvallate papillæ, was observed by DR. M. HAJEK, at the poliklinik of Prof. Schnitzler, of Vienna (*Internat. klin. Rundschau*, 1892, No. 31). It was severed from the tongue with scissors. Arterial hemorrhage ensued, which ceased after half an hour's energetic compression, followed by cauterization. Histologic examination revealed typical tongue tissue in all its constituents. The case is believed to be unique.

TUBERCULOSIS OF THE TONGUE.

DR. HAJEK reports (*Ibid.*) an interesting case of tuberculous infiltration of the folliculous structures of the tongue, with multiple nodules in its anterior portion. Despite concurrent tuberculosis of larynx and lung, histological examinations of portions excised for the purpose failed to reveal tubercle bacilli. This result is said to be not unusual in lingual tuberculosis, as exemplified in a number of recorded instances referred to. Under careful curetting, followed by frictions with lactic acid, the parts cicatrized in a few weeks.

SARCOMA OF THE SOFT PALATE.

DR. M. HAJEK reports (*Internat. klin. Rundschau*, 1892, No. 31) an instance in a man fifty-four years of age, which so closely simulated a fluctuating peritonsillar abscess that it was excised to give egress to the pus. Blood issued, commingled with broken-down tissue. Half an hour later such profuse hemorrhage occurred that the wound was packed with iodoform gauze, over which the edges were sutured. Eight days after removal of the stitches, sponge-like masses began to be discharged into the mouth, and the parts bled readily. Four weeks later the upper jaw of the same side was pushed forward, with distortion of the eyeball upward. The patient died soon after. Histological examination of an extirpated portion revealed round-celled sarcoma of excessive vascularity, with large and numerous cells and very little connective tissue.

[This case is somewhat similar to an unreported case of sarcoma in a lad brought a few months ago to Jefferson College Hospital clinic, and which so closely simulated a peritonsillar abscess as to invite incision. There was some escape of blood, but not in excessive amount. In both instances the lesion was on the left side, and in both a recent history of febrile sore-throat led to the mistake in diagnosis, which was rectified only after failure to give exit to pus, as expected.]

ADENOID GROWTHS IN THE PHARYNX.

DR. FRANK E. MILLER, of New York, extols (*Med. Record*, 1892, No. 1111) Gottstein's improved curette, which he figures in connection with some instructive diagrams and cuts illustrating its use.

STRICTURE OF THE ŒSOPHAGUS.

DR. WALTER F. CHAPPELL, of New York, reports (*Med. Record*, 1892, No. 1111) some cases illustrative of the value of permanent tubage by Symond's methods.

DIPHTHERIA.

SPRONCK describes (*Centralbl. f. d. med. Wiss.*, 1892, No. 19, from *Centralbl. f. allg. Path.*, etc., 1892, iii., No. 1) an œdema in the connective tissue around the wound of tracheotomy, and due to invasion by diphtheria bacilli, as proven by microscopic investigation, culture, and inoculation.

A few excellent results from the constitutional effects of pilocarpine in apparently hopeless cases involving the larynx, are reported by DR. HANS DEGLE, of Kindberg (*Wien. med. Presse*, 1892, No. 44). From three to four centigrammes are given in the twenty-four hours in combination with infusion of ipecacuanha and syrup of senega. The beneficial effects begin in from twelve to twenty-four hours, with increased salivation and perspiration, sometimes attended with emesis and expulsion of membrane, without special nausea or any signs of collapse. No unfavorable complications from the remedy occurred in the cases treated, some of which were in very young children.

SPASMODIC COUGH.

DR. FURUNDARENA-LABAT describes (*Rev. de Lar.*, etc., 1892, No. 4) a case of spasmodic cough, which he terms chorea of the larynx, in a girl twenty years of age, due to pressure upon the nasal septum by bilateral hypertrophy of the turbinates, as demonstrated by cessation of the painful malady on electric cauterization of the hypertrophied structures. Perfectly well until attacked with *la grippe* six months previously, the patient recovered with aphonia and a dry, barking cough, continuing during her waking hours.

[The choreic movements were doubtlessly the succussions of the paroxysms of cough.]

MORBID GROWTHS IN THE LARYNX.

THE late DR. P. MICHELSON, of Königsberg, left a paper on the connection between pachydermia laryngis and tuberculosis, which is published in the *Berliner klin. Woch.*, 1892, No. 7. At a recent meeting of the Verein für wissenschaftliche Heilkunde, Dr. Michelson exhibited a larynx from a female subject presenting the typical characteristics described by Virchow. This is the first reported instance of the typical form of the disease noted in a female subject. He then reports and illustrates a few instances of the disease in association with tuberculosis, one of which presents the most typical representation that has been published.

DR. EDMUND MEYER reports (*Berlin. klin. Woch.*, 1892, No. 19) two cases of pachydermia verrucosa laryngis. In one, a large grayish-white growth springing from the right ventricle, nearly occluding the larynx, was at first

taken for carcinoma. Microscopic examination of an extirpated fragment revealing its benignancy, it was removed endolaryngeally in several fragments. Careful investigation showed it to be a pachydermia verrucosa. The clinical and laryngoscopic features of this case are peculiar. The second case is one of those ordinarily classed as pachydermia.

CARCINOMA OF THE LARYNX.

IN an excellent paper (*Deutsche med. Woch.*, 1892, No. 19) on the diagnosis and treatment of laryngeal cancer, DR. GOTTSTEIN expressed his belief that in the majority of instances carcinomatous infiltration of the tissues precedes the development of the tumor. According to his experience carcinomatous infiltration without tumor-formation occurs more frequently and remains under observation much longer than carcinomatous tumors without infiltration. In one of his cases the carcinomatous infiltration existed for at least three years before the tumor began to be formed. Gottstein places little pathognomonic value upon impaired mobility of the affected vocal band, and realizes that the extirpation of fragments of the growth for microscopic investigation is usually impracticable. He relies greatly upon diagnosis by exclusion, taking carcinoma for granted whenever tuberculosis, lupus, syphilis, etc., can be safely excluded in the presence of a diffuse infiltration.

As to treatment, endolaryngeal procedures are justifiable only in very circumscribed growths without surrounding infiltration, and unjustifiable if there is the slightest infiltration. If the infiltration be slight, the larynx may be split and the diseased tissues be exsected with a surrounding zone of healthy tissue. If the infiltration is extensive, partial or total extirpation of the larynx is requisite accordingly.

EXTIRPATION OF THE RIGHT SIDE OF THE LARYNX.

DRS. KULENKAMPFF and NOLTENIUS report (*Berlin. klin. Woch.*, 1892, No. 36) a case of carcinoma of the right vocal band, for which unilateral laryngectomy was performed by Kulenkampff. The progress of the disease is well shown and illustrated, as is the laryngoscopic image taken six months after the operation.

ON DEATH FROM HEART FAILURE AFTER EXTIRPATION OF THE LARYNX.

DR. M. GROSSMANN has been conducting some experiments (*Wien. med. Woch.*, 1892, No. 44) to try and determine the cause of death from cardiac deficiency setting in after a few days of satisfactory progress in cases of extirpation of the larynx. He inclines to the belief that irritation of the central ends of the severed superior laryngeal nerves, possibly excited by the antiseptic dressings, may be regarded as the cause, or perhaps a neuritis may be developed in the central portion of the severed nerve.

A marked increase ensues in the arterial pressure, producing repletion and distention in the large arteries and in the left ventricle.

OBSTETRICS.

 UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC;

CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE;

CLINICAL LECTURER ON OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE;

VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

 THE ANATOMICAL RESULTS OF SYMPHYSIOTOMY.

RECENT observations as to the increase in pelvic diameters following symphysiotomy have been made by BIERMER, of Breslau, who reports his results in the *Centralblatt für Gynäkologie*, 1892, No. 51. He severed the symphysis pubis in four pelves, one a patient not in the puerperal state, the remaining three women having perished soon after labor. The results as given in figures, and obtained by measuring these pelves after section had been done, are as follows:

When the symphysis separated 1 cm. after incision, the antero-posterior diameter of the pelvic inlet was increased $\frac{2.5}{100}$ cm., the transverse diameter was increased $\frac{7.5}{100}$ cm., and the obliques $\frac{5.0}{100}$ cm.

When the symphysis pubis separated 2 cm., the antero-posterior diameter was increased $\frac{2.5}{100}$ cm., the transverse 1 cm., the obliques $\frac{7.5}{100}$ cm.

When the symphysis separated 3 cm., the antero-posterior was increased $\frac{5.0}{100}$ cm., the transverse $1\frac{1}{2}$ cm., and the obliques $1\frac{1}{10}$ cm.

When the symphysis separated 4 cm., the antero-posterior was enlarged $\frac{6.5}{100}$ cm., the transverse 2 cm., the obliques $1\frac{7.5}{100}$ cm.

When the symphysis separated 5 cm., the antero-posterior diameter was enlarged $\frac{8.3}{100}$ cm., the transverse $2\frac{1}{2}$ cm., and the obliques $2\frac{1}{2}$ cm.

When the symphysis separated 6 cm., the antero-posterior was increased $1\frac{1}{10}$ cm., the transverse 3 cm., the obliques $2\frac{9}{10}$ cm.

When the symphysis separated 7 cm., the antero-posterior was increased $1\frac{4}{10}$ cm., the transverse $3\frac{1}{10}$ cm., and the obliques $3\frac{1}{2}$ cm.

When the patient was put in the lithotomy position and the symphysis pubis was incised, the two halves of the pubis separated spontaneously 4 cm. Motion could be distinctly appreciated in the right ilio-sacral joint.

When the pubic arch separated 9 cm. a cracking sound was heard in the right ilio-sacral joint, but on gentle pressure the joint completely closed. There was a separation, appreciable by the finger, of $1\frac{1}{2}$ cm. When the two halves of the pubes were so stretched that the distance between them measured $10\frac{1}{2}$ cm., a similar sound was heard at the left ilio-sacral joint. A visible separation measuring $1\frac{1}{2}$ cm. was detected in that joint.

 THIRTEEN CASES OF SYMPHYSIOTOMY.

DURING the year 1892 (*Annales de Gynécologie et d'Obstétrique*, January, 1893), PINARD performed symphysiotomy eight times, and those associated with him in the Baudelocque Clinic of Paris performed the operation five

times—a total of thirteen cases in this clinic during 1892. The results, as regards the mothers, left nothing to be desired. The pelvis in each instance united solidly, the patients recovering perfectly in all particulars. Three of the children perished; in one case a fracture of parietal bone occurring, the child being born by extraction, the breech presenting.

The second infant was congenitally feeble, and an autopsy revealed no adequate cause of death.

In the third case the child died of fracture of one of the frontal bones; the head had been firmly engaged before the symphysiotomy, and the forceps had been applied, it being impossible to fit the instrument accurately upon the fetal head.

THE USE OF THE ESMARCH BANDAGE IN SYMPHYSIOTOMY.

TÖRNGREN, of Helsingfors, reports (*Centralblatt für Gynäkologie*, 1892, No. 49), two interesting cases of symphysiotomy performed for contracted pelvis, terminating in the death of one of the mothers and the recovery of both children. The mother perished of fatty degeneration of the heart, pulmonary emphysema, and chronic nephritis, the immediate cause of death being paralysis of the heart. In both these cases the wide portion of the Esmarch bandage was employed to bring together the severed pubic joint with great convenience. Some hemorrhage was observed after the operation, coming probably from cavernous tissue situated around the *ligamentum arcuatum*. In one case this ligament was not divided by the knife, but it was found to have been torn asunder when the child was delivered with forceps.

TWO CASES OF NON-PENETRATING RUPTURE OF THE UTERUS.

KUPFERBERG (*Münchener med. Wochenschrift*, 1892, No. 50), describes the case of a multipara who had had transverse presentation in one labor terminated by version and extraction. Her pelvis was normal in dimensions, the contraction ring was not discernible, and the general condition of the patient was good. There was no evidence of threatened uterine rupture, and accordingly under anæsthesia version was performed. The extraction of the child was easy, although the child was found to be dead, having probably perished several hours previous. The uterus contracted well, and was drawn somewhat to the right side. Twelve hours after labor, assistance was summoned on account of the pain experienced by the patient, and failure in the discharge of the lochia. On examination, a sensitive area was found in the left hypogastrium, the lochial secretion being absent. On examining the uterus, it was found drawn over toward the right; on the left side, extending from the os uteri, was a tear in the neck of the uterus an inch and a half long, through which two fingers could be introduced into the pelvis and carried to the anterior superior spine. The hand placed opposite recognized the fingers through the abdominal wall. The mesentery and intestines could not be felt through the laceration. A vaginal douche of $\frac{1}{2}$ per cent. salicylic acid was cautiously given, a broad bandage pinned firmly around the abdomen, and twenty drops of tincture of opium were given, and the patient was brought into the hospital. The patient's recovery was uneventful, and occu-

pied two weeks. When she was discharged, the uterus had undergone good involution, and was drawn somewhat toward the left side.

A second case was that of a rhachitic woman pregnant for the fourth time. The history of her previous labors was that of instrumental and difficult delivery. Pelvis was contracted in the antero-posterior and oblique diameters. In the effort to save a living child, the patient was anæsthetized and version performed, some difficulty being experienced in bringing down the foot which had been grasped. The child turned suddenly, and it was thought that the head could be felt on the right side of the uterus apparently just beneath the abdominal wall. The child was delivered without especial difficulty, and was asphyxiated, but resuscitated. When an internal examination was made, it was found that on the right side of the cervix a rent extended from the inner to the outer os uteri, extending through the muscular tissue opening the parametrium, and extending downward and on the right a distance of two cm. In this opening neither mesentery nor intestine was found, but only a few blood-coagula; as the uterus could be easily brought down to the floor of the pelvis, the rent in its muscular layer was closed by sutures. The puerperal period was interrupted by parametritis, from which the patient recovered without further complication.

THE USE OF ELECTRICITY IN OBSTETRIC PRACTICE.

LUDLOW, in the *New York Medical Record*, vol. xlii., No. 26, describes cases in which great advantage was found in using the faradic current to promote uterine contractions, facilitate labor, and check hemorrhage. The battery had a contact-breaker capable of nice adjustment. The current was applied with the positive pole to the sacro-lumbar region, and the negative upon the abdomen. Sponge electrodes are found convenient for this use. Electrodes must be so placed that the current does not pass through the head of the child. Many prefer the hand to any metal or sponge electrode. His cases embrace retention of the placenta, post-partum hemorrhage, and the use of the forceps when the mother's strength failed. His results were uniformly good, justifying the commendation of this method of treatment.

AN ELEVEN MONTHS' MONSTER WITH CONGENITAL TUBERCULOSIS.

A very interesting case, showing intra-uterine tuberculosis, is described by SARWEY in the *Archiv für Gynäkologie*, Band xliii., Heft 1. The mother of the child was a multipara who had borne healthy children. When several months pregnant she received a great mental shock from an accident in which she supposed her husband had perished. Shortly afterward foetal movements ceased, and she entered a gynecological clinic, where she was under observation. She was declared pregnant and subsequently discharged. Her labor came on at about the eleventh month of pregnancy, resulting in the birth of a monstrosity deformed in many portions of its body. During the dissection of this specimen, when the organs of the throat were removed, tubercular foci were found in the bodies of the three upper cervical vertebræ in which tubercle bacilli were demonstrated. The viscera of the foetus and its cord and placenta revealed no evidence of syphilis or tuberculosis.

There is no reason to doubt the prolonged period of gestation in this case, as critical examination of the foetus disclosed the presence of those conditions which point to prolonged gestation. The influence of the mental shock upon the development of the foetus seems to be a direct coincidence in, not directly, cause and effect. The foetus showed failure of development in many portions of the skeleton and in the organs of the special senses. A careful examination of the parents of the foetus disclosed the fact that the husband had suffered for a long time with chronic cough, accompanied by muco-purulent expectoration. The mother of the foetus showed no evidence of tuberculosis, and gave no family history of such a complication.

CHOLERA AND PREGNANCY.

GALLIARD (*Gazette hebdom. de Médecine et de Chirurgie*, 1892, No. 40) reports several cases of pregnancy complicated by Asiatic cholera. Two of these cases recovered; one was pregnant six months, and had a mild attack which resembled cholera, and recovered under treatment by lactic acid. A second favorable case was pregnant eight months, had also a mild attack of cholera complicated by jaundice on the seventh day, was delivered on the eighth day, and recovered after a normal lying-in period. Her child also survived. In the second case, the husband of the patient died of cholera, and the diagnosis seems to have been reasonably sure. Jaundice is not a common complication in cholera. Among the fatal cases was one pregnant at seven months, the foetus dying *in utero*, and the mother perishing without the expulsion of the foetus. Another, pregnant at eight months, died without expelling the foetus, which died on the sixth day. Several other fatal cases are reported, in none of which was the foetus expelled. In a patient pregnant eight months, the foetus had died before her admission to the hospital. It was expelled on the eleventh day, the death of the mother following soon after. These cases were treated symptomatically with lactic acid, laudanum, cocaine, menthol, and intra-venous transfusion. The results of treatment were in the main entirely negative. The post-mortem examination upon the bodies of women dying with cholera while pregnant showed a very diminished power of resistance in all the tissues. It is interesting to note that while many acute infections result in the expulsion of the foetus, in cholera the child dies *in utero*, but is retained. The mortality of pregnancy complicated by cholera is almost 100 per cent.

THE TREATMENT OF POST-PARTUM HEMORRHAGE.

At a recent meeting of the British Medical Association, HERMAN, of London (*British Medical Journal*, 1892, No. 1669), describes the most important steps in treating post-partum hemorrhage as follows:

To make the uterus contract, to compress the bleeding veins, to clot the blood: To secure the first, kneading the uterus and introducing the hand within its cavity are of prime importance. Accompanying these, the injection of hot water is of great value, and is preferable to the use of ice or cold water. Reflex stimulation, by laying a cold, wet cloth over the abdomen, or putting the child to the breast, is also useful. So far as drugs are con-

cerned, ergot alone receives commendation; injection of perchloride of iron is recognized as efficient in some cases, but often attended with danger. The tampon of iodoform gauze is thought to be of use occasionally. Especial importance is laid upon compressing the uterus: one hand, being folded, is inserted, carrying the cervix as far backward as possible, while the other hand is compressing the uterus strongly downward against the first hand introduced; in addition, injections of hot water and turpentine have given good results in some cases.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

DÜHRSEN'S OPERATION FOR RETROFLEXION.

DÜHRSEN (*Centralblatt für Gynäkologie*, 1892, No. 47) reports 130 operations (on 113 patients) for retroflexion of the uterus, with a permanent cure in 89.4 per cent. of the cases. In two-thirds of this number the organ was adherent, and the condition was complicated with prolapsed and adherent ovaries. Three of the patients were pregnant at the time of the report, and one had been delivered prematurely.

The following is the writer's mode of procedure: Adhesions are previously separated by Schultze's method. The vagina is thoroughly disinfected with a one per cent. solution of lysol, the operation being conducted under constant irrigation with a weaker solution of the same. A Sims's speculum is introduced, the anterior lip of the cervix is drawn down with bullet-forceps, and the uterine cavity is thoroughly curetted and irrigated with lysol. A sound is introduced into the bladder, and the viscus is pressed upward and forward by an assistant on the right. At the same time, the cervix is drawn downward, the usual incision is made in the anterior fornix, and the bladder is separated with the finger, up to the insertion of the peritoneum, as in vaginal hysterectomy. Another sound is then introduced into the uterus and the organ is strongly anteverted by an assistant on the left, until it comes in contact with the left index finger of the operator, which has been kept in the wound. The surgeon now transfixes the fundus with a curved needle, carrying a silk ligature, passed transversely; this ligature being only temporary is not tied, but the ends are held by the assistant on the right. From two to four provisional ligatures are thus inserted, each at a little higher level than the preceding one. Traction upon these serves to depress the fundus uteri still more, so that the surgeon can now insert three permanent silk sutures in a direction parallel with the axis of the vagina; these include the edges of the vaginal wound—but *not* the mucous membrane—and the muscular tissue at

the fundus, and are tied, cut short, and buried. The temporary ligatures are then withdrawn, and the vaginal wound is closed with a continuous catgut suture. The sound is removed from the uterus, the uterine cavity is again irrigated, and the vagina is tamponed with iodoform gauze.

The operation requires about ten minutes for its performance, and has never been followed by either severe pain or any bad results in the hands of the writer. The patient is kept in bed for eight days, but is not allowed to resume her ordinary occupation for some weeks. Occasional vesical irritation and menorrhagia of a transient character were the only disturbances which were noted in a few instances; in one case the sutures were discharged through the bladder. The mortality was *nil*, and in one case only was there slight septic trouble, due to the fact that bystanders were permitted to examine the patient immediately after the operation.

The writer regards his method as a decided improvement upon Schücking's, in which there is great danger of injuring the bladder and even the ureter, as shown by Glaeser; moreover, the suture within the uterine cavity may cause endometritis. Schücking's operation is followed by considerable pain, and the patient cannot dispense with a pessary, which is not required with Dührssen's method.

PERICYSTITIS.

HALLÉ (*Ann. des Mal. des Organes Génito-urinaires*, November, 1892) describes two forms of perivesical inflammation, which occur in both sexes—the cicatricial or sclero-adipose (*scéléro-adipeuse*) and suppurative. Several clinical cases are described illustrating both varieties. In the former there is an accumulation of fibro-adipose tissue around the base and at the sides of the bladder, which is firmly adherent to the adjacent pelvic organs. Masses of such hard inflammatory tissue as large as a hen's egg may be felt around the terminal portions of the ureters; these are of considerable diagnostic value. In the female, where these are essentially the products of cellulitis, they may cause occlusion of the ureter with its serious consequences.

Perivesical abscess usually occurs as a small purulent focus in the midst of a mass of the fibro-adipose tissue before described. The writer believes that this condition is more common than is usually supposed, and reports several cases in which there was no communication between the bladder and the abscess cavity. The differential diagnosis between perivesical abscess and abscess in the bladder wall is very difficult except on post-mortem examination.

THE INNERVATION OF THE BLADDER.

VON ZEISSEL (*Ibid.*), as the result of a series of experiments on curarized dogs, arrives at the following conclusions: 1. The erector nerve is the motor nerve of the muscular layer and effects the relaxation of the sphincter vesicæ. 2. This relaxation is independent of the muscular layer. 3. The hypogastric nerves preside over the closure of the vesical orifice, though their action is feeble. 4. Irritation of these same nerves causes arrest of the spontaneous movement of the bladder. 5. The action of both nerves is governed by the law that the motor nerve trunks of a muscle also supply the

antagonized fibres in the same system of muscles. 6. The erector nerve contains motor fibres supplying the longitudinal muscular fibres of the bladder and also the circular ones of the sphincter (*fibres d'arrêt*), while the hypogastric nerves supply motor fibres to the sphincter and inhibitory fibres to the muscular layer of the bladder.

STRICTURE OF THE URETHRA IN THE FEMALE, FOLLOWING
GONORRHOEA.

GENOUVILLE (*Ibid.*) calls attention to the rare occurrence of this condition in the female and makes this subject the basis of an elaborate paper, of which the following are the main points: A careful review of the literature shows that about sixty cases have been reported, the first mention of the lesion having been made by Lisfranc in 1824. It is probable that many cases escape notice, the symptoms being referred to functional trouble. The writer agrees with Vande Warker, however, that a moderately tight stricture of the urethra in the female causes much more reflex disturbance than in the male, because the bladder in the former has less power to overcome resistance than in the latter. The average age of patients with stricture was about forty. The most common cause is urethritis, as originally pointed out by Ricord. Traumatism is a rare etiological factor, one case having followed fracture of the pubic bones. Under this category might, however, be included strictures due to cicatricial contraction following puerperal and syphilitic lesions. Senile contraction of the urethra and congenital malformation (two cases of the latter are recorded) have been mentioned. Stricture following gonorrhœa is of slow development as compared with the same condition in the male—from one to twenty years, the mean being eight—probably due to the greater power of the female bladder of overcoming resistance *a fronte*, as before stated.

Our anatomical knowledge is based on the results of four autopsies, in which the condition found was simple cicatricial contraction of the canal, as in the male, situated near the meatus.

The first symptom noted by the patient is difficulty in micturition, with or without pain. The stream of urine is smaller than normal and is ejected slowly, eventually drop by drop. The contraction becomes more and more marked until retention is complete. Two cases of rupture of the bladder from excessive distention have been reported, in spite of the enormous increase in volume of which the viscus is capable. In other cases the principal symptom is a frequent desire to urinate, with agonizing pains during and after the act. Vesical tenesmus and the passage of blood are present when cystitis exists as a complication. Of course, in patients who have had gonorrhœa there may be accompanying disease of the uterus and adnexa. With stricture of long standing, cystitis and pyelo-nephritis may develop, as in the male.

The first object of the gynecologist on learning of the difficulty in micturition, should be to see if the obstruction is not caused by the pressure of some intra-pelvic neoplasm or foreign body within the vagina. Calculus or cystitis will next be eliminated, since these are so common; in fact, the existence of the stricture may not be suspected until an attempt is made to sound the

bladder. Van de Warker prefers to use an olive-pointed bougie. The stricture will usually be found in the anterior third of the urethra, though in cases of multiple stricture a contraction has been found near the neck of the bladder. One finger should always follow the course of the sound through the urethro-vaginal septum, since a well-marked induration will be felt at the point where the tip of the instrument is arrested. In some instances the entire urethra is transformed into a column of cicatricial tissue. Vesico-vaginal fistula may be a complication in cases where stricture follows puerperal lesions. Stricture of the female urethra always tends to become still more contracted, so that expectant treatment is out of the question. Gradual dilatation with bougies should first be tried every day or two. Rapid and forced dilatation have given good results, though serious, even fatal, accidents have occurred. Electrolysis has been little employed except by a few surgeons. Internal urethrotomy may be either partial (the cutting being confined to the mucous and submucous layers) or complete, when the entire thickness of the urethral wall at the point of stricture is divided. The latter is simply the "button-hole" operation long ago proposed by Dr. Emmet, and is preferred by the writer to all other methods of surgical treatment, if gradual dilatation fails.

PERITONITIS: ITS NATURE AND PREVENTION.

TAIT (*British Medical Journal*, November 12, 1892) reiterates his well-known views with regard to the pathology of peritonitis, denouncing those who differ from him in his usual vigorous and picturesque language. He scouts at the germ-theory of its origin, and reasserts that "septic peritonitis, save where definable from evidence wholly extrinsic to the condition of the peritoneum, is an etiological entity which exists only in the mind of the pathological metaphysician." He believes that too little importance has been assigned to nervous influence in furnishing the initial stimulus, basing his opinion upon the severe nervous shock noted at the outset in fatal cases of peritonitis. He places much less reliance upon the pulse and temperature than formerly, but regards an anxious facies, the presence of great nervous excitement, and abdominal distention as grave symptoms. "If a patient will be quiet and not talk, she is pretty sure to recover. If she persistently chatters, she is pretty sure to die."

The liver is to be regarded as the "lethal organ" in peritonitis, hypersecretion of bile and bilious vomiting, due to temporary paralysis of the pylorus, being early noted. If the case is to terminate fatally the vomited fluid assumes a coffee-ground appearance, "due to hemorrhagic flow from the liver." Marked changes in the latter organ will invariably be found after death, especially congestion and disintegration of tissue. As regards prognosis, the writer believes that if the serious symptoms develop by the fourth day after operation a fatal result is to be expected; if not until the sixth day, or later, the patient's chances of recovery "increase in a geometrical ratio."

The *prevention* of peritonitis is the one thing to be aimed at, since the treatment of the condition after it has fully developed is most unsatisfactory. Reject opium, starve the patient as nearly as possible during the first forty-

eight hours, banishing *ice* entirely. Thirst is not an indication to give fluids, but is merely the result of traumatism to the peritoneum. If no gas has been passed *per anum* during the first twenty-four hours after operation, and there is even moderate tympanites, the nurse is directed to give a soap and turpentine enema. If this is ineffectual, a Seidlitz powder is administered, and is repeated every hour until it acts. If vomiting occurs, with distention, five grains of calomel are given instead of the saline laxative. Even after peritonitis has apparently fully developed, the patient should have the benefit of the purgative treatment.

[Mr. Tait is so far *facile princeps* in all that relates to the practical side of abdominal surgery, that his dogmatic statements in pathology are apt to be as widely accepted as his admirable clinical teachings. The natural effect of the entire rejection of the germ-theory upon a certain order of minds would be to fill them with fatalistic views regarding peritonitis, which would be a direct injury to the adoption of an exact surgical technique. Even from a purely utilitarian standpoint, we cannot all afford to dispense with at least an "antiseptic conscience."—H. C. C.]

CÆLIOTOMY *versus* LAPAROTOMY.

It is gratifying to note that Dr. Harris's missionary work is beginning to bear fruit abroad, as well as in his own country. SAENGER, who is recognized as a true cosmopolitan in medicine, makes a strong plea (*Centralblatt für Gynäkologie*, 1892, No. 45), for the adoption of the term "cæliotomy" by his *confrères*, on the ground that since a German writer was originally responsible for the introduction of the incorrect word, Germans should be prompt to correct the error. In this respect the gynecologists should imitate the anatomists, who have begun to make vigorous efforts to purify their nomenclature.

CUNEI-HYSTERECTOMY.

THIRIAR (*Centralblatt für Gynäkologie*, 1892, No. 42), under this term describes an operation for straightening the anteflexed uterus, which seems to be more daring and ingenious than practical. He opens the abdomen, excises a wedge from the posterior uterine wall, and unites the raw surfaces with catgut sutures. In one instance the wedge extended as deep as the endometrium; the patient recovered without bad symptoms and was entirely relieved of her dysmenorrhœa.

CANCEROUS DEGENERATION OF UTERINE FIBRO-MYOMA.

SCHÄFER (*Virchow's Archiv*, 1892, Bd. cxxix., Heft 1) reports an interesting case of primary carcinoma of the lungs with metastasis in a uterine fibroid, and calls attention to the rarity of such a degeneration. Seven other cases are cited.

SUPERFICIAL EPITHELIOMA OF THE CORPOREAL ENDOMETRIUM.

GEHBARD (*Zeitschrift für Geb. und Gyn.*, Band xxiv., Heft 1) describes the microscopical appearances in a uterus removed *per vaginam* from a woman

aged sixty-six years. At the fundus uteri he found a commencing epithelioma, circumscribed and confined to the superficial layer. Piering reported the case of a similar diffuse cancrroid with metastases in the portio—a rare complication, as metaplasia of cylindrical to flat epithelium is seldom observed. Zeller has described a superficial growth which under the microscope appeared to be benignant (*ichthyosis uterina*). There was an absence of the epithelial offshoots observed in cancer.

PALLIATIVE TREATMENT OF CANCER OF THE PORTIO.

MAROCOCCO (abstract of pamphlet in *Centralblatt für Gynäkologie*, 1892, No. 40) has had excellent results with palliative treatment, and believes that patients often live longer than after radical operations. He cures with the sharp spoon and then applies tannin, first every day, and then at longer intervals. The ulcerated surfaces clear off and there is a marked improvement in the general health. This course of treatment requires no little patience on the part of the physician, but is justified by the results.

The results in thirty cases are shown, some of the patients having been under treatment for three years.

ASEPSIS IN CÆLIOTOMY.

MIRONOW (*Centralblatt für Gynäkologie*, 1892, No. 42) made a series of observations at the operating-table, in twenty-eight cases of abdominal section in Fritsch's clinic. Strict aseptic precautions were observed, no chemical antiseptic being introduced into the peritoneal cavity except in those cases in which it was necessary to use the iodoform-gauze tampon. Small pieces of plain gauze were sterilized for an hour with the instruments and were not uncovered until immediately before the operation. One of these was introduced into the peritoneal cavity as soon as it was opened, and another at the close of the operation just before the sutures were inserted, the pelvic and abdominal cavities, intestines, and tumor being wiped with them. A piece of the gauze was at once cut off with sterilized scissors and placed in 10 per cent. gelatin and 1½ per cent. agar-agar. In several instances the surrounding air was examined. Sponges, adhesions, the contents of diseased tubes, etc., were subjected to a careful bacteriological examination.

In twenty-one out of the twenty-eight cases no micrococci were found on the gauze which was placed in the abdominal cavity as soon as it was opened, while in only eight instances were they absent from the gauze used at the close of the operation. These microorganisms must have been introduced from without, and, although they caused no decided septic symptoms, in eleven cases there were marked elevations of temperature during the first week of convalescence. Since the air and the hair and beard of the operator were not sterilized, it seemed fair to infer that they were the source of infection—in fact, *micrococci cerei albi* were quite uniformly found both in the surrounding air and in the cavity at the close of the operation. The shorter the operation, the less the chance of infection, as shown by the temperature charts. Unfortunately it is not practicable to perfectly sterilize the air of the operating-room, even when it is filtered through absorbent cotton, but it should be kept as pure as possible.

The experiments seemed to prove that the peritoneal cavity does not contain microorganisms, since these were almost uniformly absent from the gauze introduced at the beginning of the operation, even when there was adhesive peritonitis subsequently, which seemed to support Bumm's view that such peritonitis following an aseptic cœliotomy is due not to infection, but to mechanical or chemical irritation.

Examinations of the contents of cysts and adherent tubes, even when these were purulent, showed in the majority of cases an absence of virulent organisms, which explains why such fluids often escape into the peritoneal cavity without usually causing serious consequences, and that irrigation with antiseptics is superfluous under the circumstances. Practically strict asepsis, though it may not render the cavity perfectly aseptic in a bacteriological sense, is still amply sufficient.

PÆDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,
OF PHILADELPHIA;

ASSISTED BY

THOMPSON S. WESTCOTT, M.D.,
OF PHILADELPHIA.

A CASE OF ACROMEGALY IN AN INFANT OF FOURTEEN MONTHS.

MONCORVO, of Rio de Janeiro (*Revue mensuelle des Maladies de l'Enfance*, December, 1892), reports a well-marked case of acromegaly, observed in conjunction with microcephalus, in a female infant fourteen months old. The case is interesting in several respects, especially as to the age of the subject. The child was born at term, began teething at four months, and had none of the eruptive fevers. The mother was a delicate woman of very nervous temperament, who from the second month of her pregnancy had been subjected to violent emotion, caused by a rupture with her husband and her subsequent abandonment. The child at fourteen months of age exhibited well-marked signs of congenital microcephalus, with the consequences of bilateral cerebral atrophy—idiocy, aphasia, paraplegia, contractures, etc.; but also, besides these, the fundamental symptoms of the acromegaly of Pierre Marie—the retreating forehead, the vertical elongation of the oval of the face, the great enlargement of the nose, the prominence of the superior maxilla, the thickening and advancement of the lower lip. In addition to these facial signs there was cervico-dorsal kyphosis with lumbar lordosis and projection of the anterior plane of the chest, compensated by flattening of the abdominal wall; and finally, the spade-like hands, with prominent thickened palmar surface, short fingers of uniform width and sausage-like appearance.

From a study of all cases reported up to 1890, Souza Leite states that, in the cases where the beginning could be definitely fixed, the manifestations of acromegaly appeared between nineteen and twenty-six years; in only one case, that of Freund, did the trouble commence as early as puberty. Marie stated that the disease was neither congenital nor hereditary. While it is impossible to assert that, in the case under discussion, the disease was congenital, it is certainly evident that its onset must have occurred very close to the time of birth. Among the antecedents was to be noted a nervous temperament in the maternal grandmother and in the mother, with great mental anxiety during the pregnancy, and on the father's part whimsicality and levity of character; but no history of acromegaly in any member of the family. The coexistence of microcephalus, with its well-marked consequences, adds another element of interest to the case, which in this respect, as well as in the age of the subject, is unique.

A CASE OF CHYLOUS ASCITES IN AN INFANT.

NIEUWONDT and ROZENZWEIG (*British Medical Journal*, 1892, ii. p. 123) report a case of this character in a child of fifteen months. The abdomen was tapped twelve times within three months, examination after each puncture showing integrity of both abdominal and thoracic viscera. The case was finally cured.

The liquid withdrawn by the aspirator was thick and looked like milk. Its specific gravity was 1022, reaction neutral, and odor nauseous. There was no spontaneous coagulation, but a coagulum formed after heating. By the addition of nitric acid a white deposit was formed, becoming yellow when the liquid was heated. Caustic potash increased the fluidity of the liquid. Under the microscope, in the midst of a finely granular serum, large nucleated cells were observed, the general picture being that of chyle.

Such cases are quite rare. Burey, who has collected thirty-three cases from the literature, attributes chylous ascites either to compression of the thoracic duct, filariosis, tuberculosis, or the puerperal state. In the present case none of these causes could be considered.

A REMARKABLE INSTANCE OF CURATIVE EFFECT OF EXPLORATORY LAPAROTOMY.

In a paper presented to the Société Anatomique de Paris, PIERRE DELBET (*Bulletins de la Société Anatomique de Paris*, 1892, October and November, p. 681) records a remarkable instance of the curative effect of an exploratory laparotomy upon a case of syphilis of the liver. The patient was a boy of two years and four months who had always been delicate. Toward the age of a year and a half he had presented a generalized eruption, which had yielded rapidly under alkaline baths prescribed by the family physician. Shortly after this the child had commenced to fail and lost appetite. It was soon noticed that the abdomen was becoming enlarged, and a blister was applied to the right hypochondrium. The health, however, continued to fail until at the age of two years and four months he was seen for the first time by the author. He was then greatly emaciated; the skin presenting a

pale yellowish tint, but not jaundiced. The abdomen was greatly enlarged, the right side, from costal border to the iliac fossa, being filled with a tumor continuous with the liver. Its surface was smooth and firm to the touch. Syphilis was immediately suggested, but, in spite of the eruption previously noted, this was positively rejected by the family attendant. The only possible alternative was to attribute the growth to malignant disease—sarcoma—with very grave prognosis. In view of this, an exploratory operation was made, and showed that the tumor consisted of the enlarged right lobe of the liver, which was pale in tint with violaceous marblings. A mass of enlarged glands could be felt in the gastro-hepatic omentum, while along the external border of the rectus abdominis, just outside of the peritoneum, was a chain of nodes, like indurated glands. One of these was removed for study, the impression at the time being that the case was one of diffused sarcoma, and, therefore, unsuitable for further interference. Before closing the wound several punctures were made in the liver, at the request of the physician, but they revealed nothing. The operation was thus purely exploratory.

The result was surprising. After three days the child regained appetite and cheerfulness, which had been lost for several months. Even before the sutures were removed, he was kept in bed with difficulty, and as soon as permitted began to play with other children. He ate, thrived, and complained no more. The liver rapidly decreased in size; and therefore, no longer doubting the syphilitic nature of the disease, the author advised specific treatment, but was still opposed by the physician, who again refused to accept such a diagnosis. Two months and twenty days after the operation the liver had regained its normal dimensions. A few days later, however, three gummata appeared almost simultaneously, one upon the forehead and two in the scalp, and positively proved the nature of the affection, after which anti-syphilitic medication was begun, but at a time when the liver had already returned to its normal size.

Delbet reports this very singular observation, but does not presume to offer an explanation, although he does not accept as satisfactory any of the theories heretofore advanced.

THE ANÆMIA CAUSED BY THE ANCHYLOSTOMUM DUODENALE.

ERVANT ARSLAN (*Revue mensuelle des Mal. de l'Enfance*, December, 1892, p. 555) makes an interesting report of the study of twenty-one cases of this parasite occurring in children under fifteen years of age. The cases all occurred within a limited territory in the provinces of Padua and Venice; they were confined to the poorer classes, and usually appeared in families in which other members were affected. The onset is always characterized by digestive disturbance, especially of the intestine, diarrhœa or constipation, colic, anorexia or abnormal appetite, vomiting after food, sometimes convulsions. This first period usually passes unnoticed, the disturbance being attributed to indigestion or gastro-intestinal catarrh. To these first manifestations are soon joined the symptoms of anæmia, which become rapidly aggravated. After a time, more or less long, the whole series of symptoms becomes rapidly worse, and with loss of flesh fever becomes more marked, and the little patient presents the appearance of advanced phthisis. Happily, in children the course is quite slow before arriving at so extreme a point.

An examination of the blood shows a combination of the characteristics of chlorosis and pernicious anæmia—marked diminution of hæmoglobin (in some cases the proportion falling as low as 13 per cent.); the reduction in the number of red corpuscles, which are pale, easily alterable, and not forming rouleaux; micro-poikilocytosis; sometimes megaloplasts of Hayem and granular protoplasmic masses; slight increase in the number of leukocytes of various sizes, of which the largest contain small black granules.

The urine is pale, of low specific gravity, often neutral in reaction, and generally increased in quantity. Sometimes albumin is present. In the last stage appears a peptonuria.

The examination of the stools is most important. These are sometimes diarrhœic, and often streaked with blood; in other cases they are normal. The eggs of the anchylostomum are quite characteristic, and appear with varied segmentations (mono-, bi-, polycellular). If the stools have stood for more than a day the larvæ may be seen in process of development. The ova of the ascaris lumbricoides often accompany those of anchylostomum; and crystals of Charcot-Leyden with some red globules may be at times observed. If the cause be recognized in time the prognosis is not bad. Treatment is simple. The ethereal extract of male fern is efficacious, and has been used by the author for children in a dose not exceeding one drachm in aromatic emulsion, to be taken at night in two parts, and followed next morning by a purgative. This dosage may have to be repeated several times at intervals of two or three days. After expulsion of the worms, tonics of iron, quinine, and the like are indicated.

Especial interest attaches to the author's researches into the pathogeny of this anæmia. Up to 1889 all writers attributed it to the direct withdrawal of blood made by the worms fixed to the intestinal mucous membrane. At that time Lussana advanced the view that the anæmia was a result of the absorption of a toxine generated in the intestine by the presence of the anchylostomum. This theory has received confirmation from Arslan's researches, which demonstrate one of the most striking types of auto-intoxication. After extracting the toxine from the urine of two patients by the method of Brieger-Otto, inoculations of rabbits were made, with progressively increasing doses. These animals quickly presented all the characteristic blood-symptoms of the anæmia under consideration. After discontinuing these injections, the animals gradually regained their former condition, with coincident retrogression of the blood-lesions. As control experiments, the same process was carried out with the urine of these patients after expulsion of the worms, or of persons affected with other forms of anæmia, without obtaining the slightest change in the blood of the rabbits inoculated.

The author, in conclusion, suggests that this experiment, which he has applied to the anæmia caused by the anchylostomum, may lead to the explanation of the nervous and general symptoms which so frequently attend the presence of other intestinal parasites in children.

THE TREATMENT OF CHOLERA IN CHILDREN.

BAGINSKY (*Internationale klinische Rundschau*, 1892, No. 45, p. 1830) gives a timely sketch of his treatment of this disease in children. After referring

to prophylaxis, which needs no special mention, he recommends, as all other writers do, the most careful treatment of the slightest manifestation of diarrhœa occurring during the prevalence of cholera. In these cases he deprecates the use of opium. If the tongue is coated, a few drops of hydrochloric acid in decoction of althea may be given; or small doses of calomel, if decided fever, nausea, and coated tongue accompany the diarrhœa and show the participation of the stomach. Other antiseptics, such as naphthalin, iodoform, carbolic acid, benzoate of soda, etc., have not proved of much value, except, perhaps, resorcin as an anti-fermentative in acute intestinal catarrh. This drug may be given in doses of from one-fifth to three-quarters of a grain. Salep and starch enemata are to be avoided, because they simply serve to increase fermentative changes in the bowel. Sherry, port wine, or cognac may be required as a stimulant. The abdomen should be protected with a warm binder, or, if decided fever be present, a wet pack to the belly may be of advantage. If diarrhœa persists after the fever subsides, nitrate of silver or tannic acid may be used, preferably as a clyster. Salol, in doses of one-fifth to two-fifths of a grain to sucklings, and from two-fifths to four-fifths of a grain to children two or three years old, several times a day, may be given. This dose may be increased to 1 or 2 grammes daily for still older children.

If, despite this cautious treatment, vomiting is added to the diarrhœa, with sharpened features and other evidences of a true choleraic attack, a warm mustard bath should be given, followed by brisk rubbing of the skin, and the administration of cognac in black coffee, with continuation of the previous treatment. Ice-cooled Seltzer water with cognac may be given to allay the thirst.

In the algid stage the indication is to maintain the circulation. Cantani, Kronecker, and Meinert employ for this purpose subcutaneous injections of a 1 per cent. solution of sodium chloride (made, according to Cantani, of four grammes sodium chloride and three grammes carbonate of sodium to the litre of water). Hypodermatic injections, also, of tincture of musk, ether, or spirits of camphor, especially the first two, are valuable in this stage, as are strychnine ($\frac{1}{100}$ gr.) and quinine ($1\frac{1}{2}$ gr.). Generally speaking, the chance of life lies not so much in the hands of the physician as in the attentive devotion of the nurse in keeping up frictions and baths and administering frequent small portions of ice-water, cognac, and coffee.

With the beginning of reaction this assiduity must be redoubled. Failure of the pulse must be met by subcutaneous infusion and injections of tincture of musk and ether. The patient should be covered more warmly, and a gentle perspiration be encouraged, but a warm pack to produce sweating is injurious. The urinary excretion should be watched, and, if retention be noted, the catheter should be employed. In other respects the usual treatment of typhoid fever should be followed. High temperature, delirium, uræmic convulsions, parotitis, pneumonia, and nephritis are to be treated in the usual way. In convalescence extreme care in diet should be enforced, and return to the ordinary mixed diet should be most gradual.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

JOHN SLADE ELY, M.D.,

PROFESSOR OF PATHOLOGY IN THE WOMAN'S MEDICAL COLLEGE OF THE NEW YORK INFIRMARY;
ASSISTANT IN PATHOLOGY IN THE COLLEGE OF PHYSICIANS AND SURGEONS; PATHOLOGIST
TO BELLEVUE HOSPITAL; AND ASSISTANT PHYSICIAN TO THE ROOSEVELT HOSPITAL
OUT-PATIENT DEPARTMENT.

EXPERIMENTS RELATIVE TO THE ETIOLOGY OF CHOLERA ASIATICA.

In the *Münchener medicinische Wochenschrift* of November 15, 1892, PROF. PETTENKOFER relates at length his experiments during the recent epidemic of cholera relative to the etiology of that disease. Pettenkofer is one of the few remaining adherents of the old theory of the meteorologic factor in the causation of infectious diseases, more particularly of those occurring in epidemics. The necessary factors in the etiology of these diseases he expresses by the formula, $x+y+z$ = infectious disease, in which x represents the specific microorganism of the disease, y the climatic and local predisposing factors, and z the individual predisposition. Without the simultaneous occurrence of all of these he believes an epidemic impossible.

In the recent epidemic of cholera Munich escaped, and, as commerce and travel between that city and those in which the epidemic raged was unrestricted, Pettenkofer refuses to believe the escape of Munich to have been due to the non-transport of the comma bacilli to that city, and attributes it to the absence of certain atmospheric conditions necessary to the development of the disease. With a view to proving this he resolved to test upon himself the power of a virulent culture of the cholera germs to produce the disease. Animal experiments, he reasons, are misleading; the only reliable conclusions are deducible from inoculations in man.

Having obtained a fresh culture of the cholera bacilli from Gaffky in Hamburg, Pettenkofer prepared bouillon cultures from these. These bouillon cultures were shown by examination to contain very large numbers of the germs. On the morning of the 7th of October, Pettenkofer swallowed 1 c.c. of such a bouillon culture suspended in 100 c.c. of a 1 per cent. solution of sodium carbonate, the object of which was to neutralize the acid of the gastric juice. No effect was noticed for about thirty hours, when diarrhœa commenced, which lasted eight days, until the 16th of the month. The passages were at first of soft consistence only, and colored: but by the second day of the diarrhœa they had become very watery and almost colorless. This continued until the morning of the 13th, when they again became colored and of thicker consistence. On the morning of the 16th the passage was normal. During all this time there are said to have been no other symptoms, except occasional painful desire to stool and a great deal of rumbling in the bowels. The appetite remained good, there was no nausea at any time, and the diet was unrestricted. Sleep was only a few times interrupted by desire to stool, and Pettenkofer continued the daily routine of his work as usual. He says that but for the diarrhœa he should not have known that he was sick in any way. No treatment was used.

Examinations for the cholera bacilli were made by Drs. Pfeiffer and Eisenthal. They were found in the watery stools in large numbers, but gradually disappeared as the passages became thicker, until on the 16th none could be detected.

Pettenkofer considers this sickness to have been nothing more than a moderately severe diarrhœa, perhaps dependent upon a slight degree of enteritis.

The experiment was repeated on the 17th of October by PROF. EMMERICH with similar result, though the symptoms in this case were more severe. Many of the stools were of a distinctly rice-water appearance, and they were much more frequent than in Pettenkofer's case. Prostration, also, was apparent, though the mind appears to have been cheerful. On October 24th the stools became formed, and were normal from that time. Comma bacilli were found in the stools from the 18th to the 28th; on the 19th in pure culture in the rice-water discharges.

Both of these cases were observed clinically by Profs. Bauer and Von Ziemssen, and were said by them to differ materially from cases of Asiatic cholera. As sufficient individual predisposition is supposed to have been present in both cases, Pettenkofer attributes his own and Emmerich's escape from cholera to the absence of the peculiar atmospheric and local conditions which he believes to be always necessary to the development of the infectious diseases.

The remainder of the paper is devoted to an extended argument in support of this theory. The relation of temperature, atmospheric conditions, rainfall, and the condition of the soil to previous epidemics of cholera are cited, and these are put forward by Pettenkofer as the peculiar climatic and local conditions necessary to cholera.

The paper concludes with suggestions as to the proper measures of prevention. Too much attention is paid to preventing the transport of the cholera bacilli—an impossibility, he says—and too little thought is given to measures tending to counteract the peculiar climatic influences.

It was hardly to be expected that conclusions so radically variant from the generally accepted notion of the causation of infectious diseases should go long unchallenged. In No. 47 of the *Deutsche medicinische Wochenschrift*, S. GUTTMANN reviews the results of the experiments and finds in them a confirmation of the generally accepted theory rather than of that advanced by Pettenkofer. He believes Emmerich to have suffered from a mild attack of cholera, and Pettenkofer to have had a choleraic diarrhœa. He cites cases in which cholera has unquestionably followed the contamination of drinking water with cholera dejections. He calls attention to the fact that Koch and his adherents have never insisted that the cholera bacillus is the only etiological factor in the production of an epidemic, but that they believe it to be the one factor without which no case of cholera can occur.

POSNER (*Berliner klinische Wochenschrift*, 1892, No. 48) further argues that three possibilities in accord with the prevalent theory present themselves in Pettenkofer's experiment: 1st, That neither he nor Emmerich afforded the necessary individual predisposition, that they were in a measure immune; 2d, That the bacilli were in some way deprived of their fullest virulence, as, for example, by an insufficiently neutralized gastric juice; or, 3d, That the

experimenters really suffered from mild attacks of cholera. He will admit only one thing in any case to have been proven by the experiment; namely, that the ingestion of cholera bacilli is not necessarily always followed by a typical severe case of cholera.

He refers to an interesting observation made this summer in Altona, that cholera developed in those houses in a certain street which were supplied with water from Hamburg, but passed over those houses receiving water from the Altona water-supply. He distinctly differs from Pettenkofer as regards the proper measures of prevention in time of a cholera epidemic, believing that our energies should be directed against the one clearly definable factor, the cholera bacillus, without which the disease cannot exist, rather than against other less tangible conditions whose agency is speculative, to say the least.

[It should further be remembered in connection with this experiment of Pettenkofer's, that the virulence of many of the known pathogenic bacteria undergoes attenuation after repeated cultivation on nutrient media, and of none is this more true than of the cholera bacillus. Pettenkofer's culture was obtained from Hamburg and is said to have been virulent, but it had been cultivated on agar and in bouillon, and the possibility of its having in that way lost a measure of its original virulence suggests itself.—J. S. E.]

THE VIABILITY OF THE CHOLERA-BACILLUS ON VARIOUS FOOD-STUFFS, ETC.

UFFELMANN in a recent number of the *Berliner klinische Wochenschrift* (1892, No. 48) records the results of an interesting investigation of the viability of the cholera bacillus on various food-stuffs and other necessities of life, made with a view to gaining some definite information as to the danger of transport of the germs upon these substances. The experiments test the viability of the bacilli in water and milk, on bread, in butter, on meat, fish, vegetables, and fruits of various kinds, on paper, on coin, on both moist and dry clothing, and on his own skin. The possibility of the transport of the contagium by flies is also investigated.

Material from two cholera stools, both shown to contain large numbers of comma bacilli, was mixed with or spread upon these various substances, and inoculations of nutrient media were made at short intervals from the contaminated areas. In water the bacilli remained viable for from five to six days; in milk, for about three days; on the surface of bread exposed to the air, for about a day; between slices of bread kept more or less moist, for eight days; in butter, for three days; on cooked meat kept moist, for eight days; on apple and cauliflower, for four days; on paper, for about a day and a half; on copper and silver coins, for only ten minutes after thorough drying; on dry clothing, for four days, but on moist linen for twelve days or even longer. It was shown that for two hours after walking through cholera dejecta, house-flies were capable of infecting nutrient media, and that the dry skin of the hand preserved the germs alive for somewhat more than an hour after contamination.

These results are of much practical interest as showing the length of time during which contaminated food-stuffs may continue to be infectious. They also teach that the organic acids of milk, meat, fruits, butter, and sour bread

do not cause immediate destruction of the cholera bacilli, and that the duration of their viability bears a general relation to the degree of moisture in the contaminated substance.

DISINFECTION IN CHOLERA.

BORNTRÄGER (*Deutsche medicinische Wochenschrift*, 1892, No. 40) suggests the use of dry heat in the disinfection of clothes and other articles contaminated with cholera. He admits that, for ordinary purposes of disinfection, this agent has been shown to be impracticable, owing to the high degree of dry heat necessary to kill the majority of the infectious microorganisms, and because dry heat has comparatively limited power of penetrating the articles to be disinfected. For cholera, however, he considers it exceedingly well adapted because of its simplicity, and he believes it, also, to be amply efficient on account of the vulnerability of the cholera bacillus to moderate heat and drying. An exposure of a few moments only to a dry heat of 100° C. is sufficient to kill the cholera bacillus. Bornträger therefore suggests that in time of emergency ordinary brick ovens, which may be quickly built, afford all that is really necessary for the disinfection of bedding, clothes, etc. The temperature should be kept above 100° C., and the articles to be disinfected should be loosely laid in the oven and exposed to this temperature for from one to two hours.

Such an oven was extemporized during the past summer by Bornträger in Sulingen, where he is health officer, and was used with success in the disinfection of the clothes of persons coming from Hamburg and Bremen.

THE TRANSMISSION OF INFECTIOUS DISEASE FROM MOTHER TO FŒTUS.

AT the present time all questions relative to the hereditary transmission of disease, besides having great scientific interest, are of much practical importance. That pathogenic germs may at times be transmitted directly from mother to fœtus has been abundantly proven by numerous observations in cases of abortion during the course of infectious diseases, notably in typhoid fever (EBERTH, HILDEBRANDT, ERNST); in pyæmia (FRAENKEL and KIDERLEN); in tuberculosis (MALVOZ, RINDFLEISCH, GAERTNER); and in pneumonia (E. LEVY, NETTER); and it has been demonstrated experimentally in animals, particularly as regards anthrax. The channel of infection has been believed to be the placental circulation, but exactly how the bacteria have found their way from the blood of the mother to that of the child has been an open question. Experiments have shown the possibility of the passage of bacteria through uninjured mucous membranes, and it has been suggested that similarly infectious microorganisms might pass through the uninjured placental vessels from the maternal to the fœtal blood. It has been more generally believed, however, that degeneration of the placenta, hemorrhage, and partial separation were necessary antecedents of such infection.

In the hope of deciding this question, BIRCH-HIRSCHFELD (*Zeigler's Beiträge*, ix., 383) has inoculated pregnant animals with anthrax, and has afterwards examined most carefully into the condition of the placental vessels. Goats, rabbits, white mice, and a bitch were made use of in the

experiments. Bacilli were found in the blood of the maternal and foetal vessels and in places in the tissue of the placenta. No lesions discoverable with the naked eye were present in any of the cases, and as the result of careful microscopical examinations, the results of which are pictured in three plates accompanying the text, Birch-Hirschfeld is led to conclude that neither foreign particles nor bacteria can pass through the uninjured walls of the placental vessels; but, on the other hand, that no gross lesions, as hemorrhage or fatty placenta, are necessarily present in cases of infection from mother to foetus, nor is any predisposing diseased condition of the placenta necessary. He finds sufficient opportunity for the transmission of the infection in minute lesions of the placenta set up by the lodgment of infectious emboli in the maternal vessels. These lesions are usually so small as to escape observation, and most careful microscopical examination is necessary for their discovery.

In conclusion Birch-Hirschfeld points out certain differences in the structure of the placenta in different animals, which would appear to make some species more prone to this mode of hereditary transmission than others, and he remarks that the delicate structure and exceedingly thin walls of the vessels of the human placenta must render it very liable thereto.

The conclusions reached by Birch-Hirschfeld as the result of his experimental study are borne out by a case reported in the same number of *Zeigler's Beiträge* (p. 428) by Schmorl and Birch-Hirschfeld, in which tubercle bacilli are shown to have been transmitted from mother to foetus. The mother, a young woman twenty-three years of age, died during the seventh month of pregnancy with tuberculosis of the supra-renals (supposed to have been primary [?]), lungs, liver, kidneys, and retro-peritoneal lymph nodes. Tubercle bacilli were seen in the blood of the umbilical vein and in the liver of the foetus, though no distinctly tubercular lesion was anywhere discoverable in its body. The presence of the bacilli in the foetal tissues was further demonstrated by inoculations of guinea-pigs and rabbits with bits of the foetal organs.

The placenta showed only very slight hemorrhagic spots in places, but scattered through it were small grayish areas about the size of a pin-head, whose minute structure showed them to resemble ordinary white infarctions, and in these, though not in the hemorrhagic spots, tubercle bacilli were found in large numbers. They were also seen in the maternal placental vessels and in the placental tissue in the neighborhood of vessels denuded of their endothelium. Lodgment of tubercle bacilli in the maternal vessels is supposed to have given rise to the minute infarctions and to the desquamation of the vascular endothelium, both of which conditions permitted the passage of the bacilli from the maternal to the foetal blood.

CHANGES IN THE HEART MUSCLE IN INFECTIOUS DISEASES.

During the course of an infectious disease no single organ commands such close attention from the physician as the heart. Hope of recovery remains while it is known to be in good condition; with its failure comes apprehension. A knowledge, then, of the lesions which may induce this failure and of the symptoms through which they may be recognized is of the greatest importance.

These have been studied by ROMBERG (*Deutsche Archiv für klinische Medicin*, xlviii. 369, u. xlix. 413) in 11 cases of typhoid fever, in 10 of scarlet fever, and in 8 of diphtheria. The gross pathological changes noticed were slight, being confined to flabbiness of the heart, cloudiness, and, in a few cases, pronounced fatty degeneration of the muscle. Nothing of moment was observed in the endocardium, pericardium, or valves.

Microscopical examination, however, disclosed decided changes. Degeneration of the cardiac muscle was present in all the cases, often distributed in irregular patches. Its most constant form was a granular degeneration of the protoplasm of the muscle cells; but fatty, hyaline, and amyloid degenerations were also noted. These changes have been observed by former writers, but Romberg describes in addition a peculiar form of interstitial myocarditis which he attributes to the action of the toxins of the various infectious diseases upon the tissues of the heart. This infectious myocarditis shows itself by spheroidal-cell infiltration of the connective tissue stroma, and was observed in 6 of the 11 cases of typhoid fever, in 7 of 8 cases of scarlatina, and in every one of 8 cases of diphtheria. The lesion was irregularly distributed, seemed to bear no definite relation to the areas of degeneration described above, and in no case were the specific bacteria of the disease discovered in it. The bloodvessels of the heart were either normal or presented only a slight degree of arteritis. No lesions of significance were discovered in the heart ganglia.

Romberg attributes much importance to this lesion. In cases of recovery from the acute disease, he believes it to be followed by the formation of patches of dense connective tissue which may seriously impair the efficiency of the heart's action and may ultimately lead to secondary changes in the heart similar to those observed in cases of interstitial myocarditis resulting from disease of the coronary arteries.

In the second part of the paper the symptoms occasioned by these lesions are discussed, but without any very definite result. The cases were not well adapted to the tracing of any very direct relationship between symptoms and lesions, as death occurred suddenly leaving very little time for the development of any pronounced train of cardiac symptoms.

Similar lesions are reported by RABOT and PHILIPPE (*Archives de Médecine expérimentale et d'Anatomie pathologique*, iii. 646) as the result of study of the hearts of forty-five cases of diphtheria.

Note to Contributors.—All contributions intended for insertion in the Original Department of this Journal are only received *with the distinct understanding that they are contributed exclusively to this Journal.*

Contributions from the Continent of Europe and written in the French, German or Italian language, if on examination they are found desirable for this Journal, will be translated at its expense.

Liberal compensation is made for articles used. A limited number of reprints in pamphlet form, if desired, will be furnished to authors in lieu of compensation, *provided the request for them be written on the manuscript.*

All communications should be addressed to

DR. EDWARD P. DAVIS, 250 South 21st Street, Philadelphia, U. S. A.

Or

DR. HECTOR MACKENZIE, 77 Lambeth Palace Road, S. E., London, Eng.

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES.

APRIL, 1893.

A CONTRIBUTION TO CEREBRAL SURGERY.

DIAGNOSIS, LOCALIZATION, AND OPERATION FOR REMOVAL OF THREE
TUMORS OF THE BRAIN: WITH SOME COMMENTS UPON THE
SURGICAL TREATMENT OF BRAIN TUMORS.¹

BY CHARLES MCBURNEY, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK;
ATTENDING SURGEON TO THE ROOSEVELT HOSPITAL; CONSULTING SURGEON TO
THE PRESBYTERIAN AND ST. LUKE'S HOSPITALS;

AND

M. ALLEN STARR, M.D.,

PROFESSOR OF DISEASES OF THE MIND AND NERVOUS SYSTEM IN THE COLLEGE OF PHYSICIANS
AND SURGEONS, NEW YORK; CONSULTING NEUROLOGIST TO THE PRESBYTERIAN
AND ORTHOPÆDIC HOSPITALS; PRESIDENT OF THE NEW YORK
NEUROLOGICAL SOCIETY.

THE practical results from the study of cerebral localization in the successful surgical treatment of brain diseases form a subject of growing interest. Every fact which bears upon it, and every case in which an operation has been performed should be recorded, whether the result obtained be favorable or the reverse. Successful results are sure to be published. It is very desirable, however, in order that we may learn to properly estimate the dangers and difficulties that may be met with in the diagnosis and treatment of localizable disease, that all results, even those which are in some measure unfavorable, should also be made known. In this paper the surgical treatment of brain tumors is to be considered. The general results of operations hitherto recorded will be reviewed, and our own experience in three cases related.

¹ Read before the New York Academy of Medicine, January 5, 1893.

The number of cases of tumor of the brain in which surgical relief has been attempted, so far as we have been able to find reports in current literature, and including the three cases presented here, is 87. Seventy-four of these were tumors of the cerebral hemispheres; thirteen of them were tumors of the cerebellum. The results are given in the following table:

	Cerebral.	Cerebellar.	Total.
Total number of cases operated upon	74	13	87
Cases in which tumor was not found	16	7	23
“ “ “ “ found, but not removed	1	2	3
“ “ “ “ removed and patient recovered	38	2	40
“ “ “ “ “ “ “ died	19	2	21

It will be seen that the percentage of recoveries after the successful localization and removal of the tumor is 46. Considering how recently the facts of localization have been determined, and how novel is the surgical procedure of operation upon the brain, this large percentage of successful results is both interesting and encouraging. Therefore every case in which the presence of a tumor of the brain is suspected should be studied with increased care, and the question of operation should be thoroughly considered.¹

It seems best to distinguish broadly between tumors of the cerebrum and tumors of the cerebellum. The diagnosis between tumors situated in these different regions is perfectly easy, and the risk of operation is so different as to demand their separate consideration.

As shown in the table already given, 74 tumors of the cerebral hemispheres have been treated surgically. In 16 of these cases the operation was unsuccessful, either because the tumor was not found by the surgeon at the point at which it was supposed to lie, or because the operation was undertaken for the relief of the symptoms caused by intra-cranial pressure, and not with a view to the removal of the tumor (8 cases).

In some of the cases the localizing symptoms were clearly insufficient to indicate the position of the tumor, and a cautious neurologist would not have advised an attempt to find it.

In others the localizing symptoms were well marked and the diagnosis seemed clear, yet the tumor really lay at such a depth as to be inaccessible, or infiltrated the brain to such an extent as to make removal impossible.

¹ The literature is extensive. Recent important articles are as follows: Weir and Seguin, *AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, July, August, and September, 1888; Keen, *AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, November, 1888; Park, "Surgery of the Brain," *Transactions of the Association of American Physicians and Surgeons*, 1889; Von Bergmann, *Die chirurgische Behandlung von Hirnkrankheiten*, 1889; P. C. Knapp, *Intra-cranial Growths*, 1891 (the last contains tables of all cases up to date of publication); Theodore Diller, *The Pittsburg Medical Review*, October and November, 1892.

In 57 cases out of the 74 the tumor was successfully located and removed: 38 of the patients recovered; 19 died. Of these 57 tumors, 34 were removed from the motor (central) region of the brain. It is in this region that the location of a tumor can be most easily determined, and here few mistakes in diagnosis have been made. The occurrence of spasm or of paralysis, limited to one limb or extending from one to the other in a definite order, is diagnostic. In one of the cases reported, the motor symptoms were certainly of the greatest service in determining the location of the tumor. So, too, in a case reported by Erb in July, 1892, in the *Deutsche Zeitschrift für Nervenheilkunde*. This case deserves mention on account of its unique history:

The patient was a male, who had suffered for some months from the general symptoms of brain tumor, namely, headache, vertigo, vomiting, and optic neuritis. The development of occasional spasms, followed by paralysis in the left arm and leg, indicated the central convolutions of the right hemisphere as the probable position of the tumor. Czerny operated in November, 1890, and found the tumor to be an infiltrating gliosarcoma. He removed a part of it—complete extirpation being impossible. The patient recovered from the operation, and was very much improved for eight months, when he began again to suffer from the old symptoms. In November, 1891, it was thought best to repeat the operation, and again a large part of the tumor was removed. Striking improvement followed this second operation; but at the date of the last report, July, 1892, symptoms had returned, and a third operation was under discussion.

This case demonstrates the possibility of relieving the most serious symptoms and of prolonging life even when the entire tumor cannot be removed.

The location of the tumor in the remaining 23 cases was as follows: in the frontal region in 6; in the parietal region in 3; in the occipital region in 1. In the remainder the location of the tumor was not exactly stated in the histories. It is evident, therefore, that tumors have been successfully removed from almost all parts of the convexity of the cerebral hemispheres. It is impossible either to satisfactorily diagnosticate or to remove tumors lying on the median or basal surfaces, and no attempt at such removal has been made.

Surgical treatment has been attempted in 13 cases of cerebellar tumor. In only 2 cases has the operation been successful, and in 7 cases the tumor was not reached. An abstract of all these cases is given at the end of this paper, in order that the difficulties met with may be appreciated.

An operation undertaken with a view to the removal of a tumor of the brain should be especially well considered beforehand. To a much greater extent than is at all frequent in other parts of the body are these operations essentially exploratory, and in spite of the very perfect

and constantly increasing knowledge of the character and localization of brain tumors, the operator will probably always be in doubt, until the tumor is reached, as to whether he will be able to remove it or not. Assuming that an accurate diagnosis has been made, and that the localization of the disease has been carefully studied by a skilled neurologist, grave doubt may still exist as to the consistency, the size, the vascularity, even as to whether the tumor is situated on the surface or buried to a considerable depth, and still more as to whether the tumor is encapsulated and easily enucleable, or so infiltrates the brain tissue as to present no definite border. Many exploratory operations in other parts of the body are extremely simple and perfectly safe, so long as the work done is confined to the strict nature of an exploration. We enter the peritoneal cavity, explore kidneys through incision in the loin, open joints, and take sections from tumors for examination with almost entire impunity from accident, so long as nothing more than investigation be made. The reason for this safety lies chiefly in the fact that the exploratory road is not difficult, and that such difficulties as exist are appreciated beforehand and are easily overcome. This statement, however, does not apply to operations upon brain tumors. Unexpected difficulties, even serious accidents, are liable to occur at almost any stage in the operation, so that from beginning to end the exploration itself is an operation of importance. This is better appreciated when we consider the causes of death after these operations, whether the tumor has been reached and removed or not. Excluding complications not immediately dependent on the operation, death has resulted in 54 per cent. of the cases operated upon, either from sepsis, hemorrhage, or shock, or from two or all of these causes combined. Sepsis need not be especially considered, as there exists no greater difficulty in avoiding it than the surgeon meets with in other parts of the body. Most careful antiseptic precautions should be taken. The head should be completely shaved, and great attention be paid to the thorough cleansing of the scalp, the operation being postponed if it is found that a moist eczema or other discharging surface exists at any point. Hemorrhage is a most important consideration. It begins from the moment the knife touches the scalp, is enormously different in quantity in different cases, and is liable to be unexpectedly increased at a later stage in the operation after the patient has already lost an important quantity of blood. I am convinced that hemorrhage deserves the closest consideration on the part of the operator.

The incisions in the scalp should unquestionably be free. After opening the skull, it may be necessary to greatly enlarge the operative field, and this stage is a most unfavorable one for making first incisions in the scalp. It is best to lay bare a bone area at least three inches in diameter. The horseshoe-shaped incision, or one re-

presenting more than half of a circle, is most frequently used, and is doubtless the best. Such an incision allows a large flap, including all the integuments excepting the periosteum, to be easily turned back. The hemorrhage from this incision is very active, and the means adopted for its prevention not entirely satisfactory. The use of the rubber band wound tightly about the head below the field of work is exceedingly disappointing, probably on account of the shape of the skull, the rubber band not making constriction evenly about the whole circumference. Finger pressure over the afferent vessels is also insufficient, for only a few vessels can be compressed, while, owing to the free anastomosis in the scalp, the bleeding comes from every direction. I am inclined to think that the most practical and satisfactory method is to make the whole incision at once, immediately compressing the entire wound with dry gauze, and then lifting the gauze first at one point, and then at another, to seize the vessels in succession with pressure-forceps. With good assistance and active work the vessels can all be controlled pretty rapidly.

The next question that arises, after the vessels have been ligated and the very numerous pressure-forceps gotten out of the way, is: How shall the skull be entered? A very usual method by which the skull has been opened has been by means of the trephine, either large or small, the opening being afterward enlarged with the rongeur forceps. If a trephine less than an inch and a half in diameter be used, the opening made will not be large enough to treat any brain tumor, excepting a very small surface growth. The opening has usually been enlarged with rongeur forceps—a great sacrifice of bone, which cannot be entirely safely replaced, being thus made. If a still larger trephine is used, one has a clumsy instrument to work with, and still has a large bone defect to close. Ordinarily the button of bone had better not be replaced after the removal of a tumor, for the cavity in the brain frequently needs packing with gauze, and, besides, the button may necrose.

Having frequently made use of another method of entering the skull for extensive operations, I have no hesitation in recommending it to facilitate the removal of brain tumors. I refer to the method suggested by Wagner. It consists essentially in cutting through the skull with the chisel in the line of the scalp incision, the scalp flap not having been turned back. This bone flap with scalp flap still attached is then pried up and turned back, thus exposing as large an area of dura mater as the original incision outlined. The method is practically applied as follows: The horseshoe-shaped scalp incision having been made and all vessels caught and tied, the cut is deepened through the pericranium in the same line, so that this tissue may not be injured when working on the bone. At the centre of the convexity of the incision, the pericra-

nium is turned back far enough to permit of the application of a half-inch trephine. This small button of bone is removed to allow of the subsequent use of the elevator. Starting from this trephine opening with a very small gouge, a shallow groove is cut following the line of incision in scalp and pericranium. Cutting this groove prevents subsequent splintering of the surface. Then with a sharp osteotome held nearly parallel with the surface of the skull, it is not difficult with the mallet to cut through the skull without injuring the dura mater, until, introducing an elevator into the trephine opening, the whole plate of bone can be pried up, the uncut portion of its circumference readily breaking. The whole plate of bone has the pericranium and scalp flap attached, and opposite the line of fracture, even, the pericranium remains unturned. Slowly lifting the bony plate and feeling beneath it to make sure that vessels or adhesions are not rudely torn, the entire mass can be turned back and the dura exposed. If localization has been fairly correct it will not now be necessary to enlarge the opening. Hemorrhage from the bone may be, as it was in one of the cases reported, excessive; usually, it will cease after short pressure; if not, the larger vessels should be plugged either with gauze or bits of sponge or catgut. Hemorrhage from the surface of the dura is usually slight, and can be most rapidly stopped with a light touch of the Paquelin cautery, or, if one prefers, a fine curved needle threaded with catgut may be passed under the bleeding-point and the vessel tied.

To open the dura, I prefer to cut directly down upon it with the knife at a point an eighth or a quarter of an inch away from the bony margin. When an opening is made, small blunt scissors may be introduced, and the whole flap of dura, similar in shape to the bone flap, turned back. Picking up the dura mater with a tenaculum is more likely to be accompanied by a wound of a vessel in the pia mater. Of course, if the dura is adherent, the flap must be cautiously made and reflected. Color, consistence, bulging, and pulsation of the surface of the brain are now all rapidly determined. If the tumor is evident at once and clearly defined, with a capsule, its enucleation with the finger or blunt scissors is not difficult. If tumor tissue is plain, but the growth infiltrates the brain substance, it may be very difficult to decide when to stop in attempting removal. If clearly not removable *in toto*, it may still add much to life and comfort to remove a portion, as was shown in Czerny's case, intra-cranial pressure being relieved. As a rule, if removal is begun, it had better be completed, for to leave a portion of an infiltrating tumor is to leave the patient with the certainty of recurrence at an early date. If tumor tissue is not seen on the surface, its presence beneath the surface may be suspected from the prominence of, and the absence of pulsation in, the surface tissue. Palpation may define that a solid tumor exists below; or a blunt probe may be pushed in the most likely direction to see if

resistance is encountered ; or an aspirating-needle may be introduced to determine the presence of fluid. If a solid tumor is discovered, the convolutions over it should be separated or the brain should be incised, as may be necessary, and removal effected, if possible by enucleation. If a cystic tumor is found, it should ordinarily be incised and drained. Drainage can best be effected by the introduction through the incision of a narrow strip of thin rubber tissue which has been folded once or twice upon itself. Fluid flows out by the side of this material perfectly well, and the thin and flexible tissue is incapable of doing harm if thoroughly aseptic. Wounded vessels in the pia mater may be quite troublesome, not so much from the quantity of blood lost as from the amount of time lost in attending to them. Their walls are so delicate that the ligature is applied with difficulty. A light touch with the cautery is the quickest way of disposing of the smaller ones, and the larger ones may be compressed by a bit of sponge in the hand of an assistant, and the cautery or a ligature applied, if necessary, later. The wounding of one of the large venous sinuses, or of a vein near the point of entrance into a sinus, is sure to be followed by abundant hemorrhage. If the wound in a sinus is large, it had best be immediately packed with gauze. If it is small enough to be closed by one or two pairs of pressure-forceps, these may be applied, and left in position supported by the dressings for two or three days. It is useless and time-consuming to try to ligature or sew up a wounded sinus.

Free hemorrhage from the cavity left after removal of a tumor should be met by immediate compression with gauze packing, which may be left in place, if necessary, until a change of dressings is made. In operating for tumor in the cerebellum, the method last recommended for entering the skull is hardly applicable. The area is too small and the danger of wounding the sinuses too great to allow of the lifting of a bony plate with the thick flap of soft coverings. It is better here to sacrifice the bone, making a small, safe opening with trephine or chisel opposite the centre of the fossa, and then enlarging the opening on all sides with forceps. The fact that the present knowledge of cerebral localization does not enable us to decide whether a cerebellar tumor is a surface or a deep one, renders these operations more especially exploratory. Whether it is safe or justifiable to cut away a considerable portion of cerebellum, in order to reach a deep-seated tumor in this region, further experience is needed to decide.

If a tumor has been found and removed, the dura mater would probably be only partially stitched back into place by fine catgut stitches, as to completely close a cavity in the brain in which bleeding was still going on would subject the patient to the dangers of compression. Therefore, usually packing would at first be left in place, or other drainage provided for. If a tumor is not found and no contra-indication to

complete closure exists, the dural flap may be replaced and stitched all the way round to the narrow border left for that purpose. The advantage of the large single bone flap is now readily appreciated. The osseous plate with pericranium undisturbed and integument undissected is turned back into place and fits accurately. The skin may be stitched all the way round or not, according as drainage must be provided for or is not needed. The small trephine opening is there if a drain is required. If packing has been introduced, the bony plate may be left partly raised like the lid of a box, and only pressed into place after the packing has been removed.

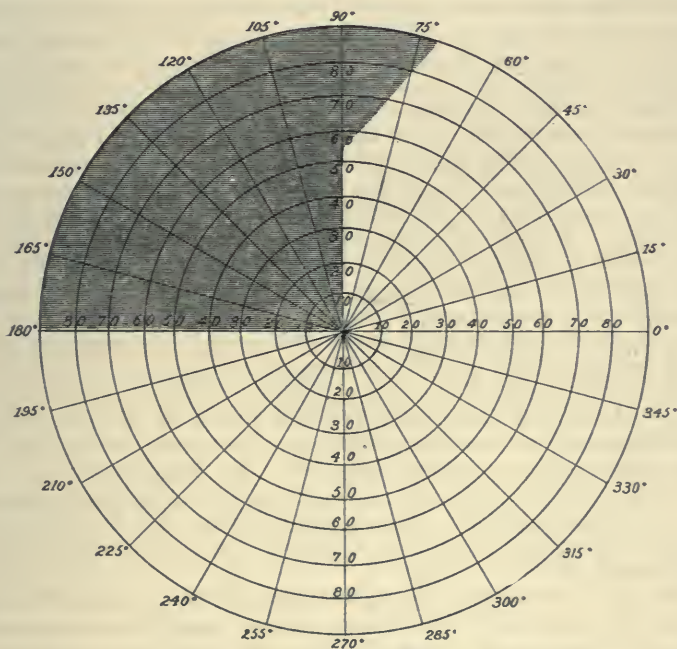
The question of hemorrhage has been referred to in detail, because blood loss in itself has undoubtedly not a little to do with the death-rate after operations for brain tumors. Bleeding is met with in most cases at every stage in the work, and not only may the sum of the loss be considerable, or even very large, but every moment spent in attending to it prolongs the operation, and so directly contributes to inducing the third cause of fatality mentioned, namely, shock. The length of time occupied and the size of the tumor bear a direct relation, as in the surgery of other parts of the body, to the amount of shock developed. Every effort should, therefore, be made to shorten the time occupied in operating, as the size of the tumor will be accurately known only at a late stage in the operation. No especial means either for the prevention or treatment of shock from operations upon brain tumors exist, other than those with which every surgeon is familiar when he meets with this condition under other circumstances.

CASE I. Sarcoma of the left frontal lobe; mental and motor symptoms; successful localization and removal; subsequent death.—C. S., aged forty, a farmer by occupation, of good family history, and of good general health until this illness (with the exception of specific disease acquired at the age of twenty-two, but without subsequent manifestations), was suddenly seized with a convulsion in December, 1890, while driving a cart. He remembers a sudden feeling of dizziness and distress, and then a turning of his head forcibly to the right side; he has no recollection of what followed, but learned that he had been found upon the road, had been picked up and carried home, where he remained unconscious for two hours and a half; he is not sure whether he had a general convulsion. On recovering consciousness he found his right side, including face, arm, and leg, slightly weak, and noticed some difficulty in talking; this condition gradually subsided, so that in two weeks he was able to go back to his work, and felt in his usual health. This is the only convulsion or sudden attack of any kind which occurred during his entire illness. But it is from this attack that his illness dates.

The various symptoms which subsequently developed were very gradual in their onset, so that it is quite impossible to fix any dates for particular symptoms. During the six months from January, 1891 to July, 1891, he suffered occasionally from headache and nausea, and in July began to notice that his sight was growing dim, and that the head-

aches were becoming more and more frequent and intense. Between July, 1891, and January, 1892, the pain became localized over the forehead and top of the head on the left side; it was not particularly worse at night, but at times was very severe. During this period he noticed a progressive dulness of thought, general hebetude, an aversion to work which was unnatural to him, and a slowness of mental activity which he described as increasing stupidity; and increasing difficulty in the use of language, so that it took him longer to express his ideas, there being, however, no difficulty in articulation and no lack of words.

FIG. 1.



CASE I.—The visual field of the left eye.

He also noticed by the close of the year that his right side had become a little weaker than his left side; that his hand was slightly awkward and that his leg felt a little heavy. The symptom, however, which caused him most distress, was his gradually increasing dimness of vision, and it was on account of this that he came to New York from his home in Alabama. He was seen at the New York Eye and Ear Infirmary by Dr. Derby, who discovered a well-marked condition of optic neuritis in both eyes, more marked in the left eye. V.: O. D., = 20/L.; O. S., = 20/xx. In right eye the upper and inner quadrant of visual field wanting. Dr. Derby referred him to the Nervous Department of the Vanderbilt Clinic for confirmation of his diagnosis of cerebral tumor, and also for treatment.

When I first saw him at the clinic on January 14, 1892, the following symptoms were present: severe and constant frontal headache located

over the top of the head, and more especially over the left side, about at the upper third of the coronal suture, and at this area, over a space about three inches in diameter, there was considerable *tenderness to percussion*. There was no vertigo on rising or on change of position. There was a state of *partial blindness* due to the very well marked condition of *optic neuritis*, and decidedly worse in the left eye.

There was a condition of *mental dulness* which was noticeable, and which he himself and a friend who accompanied him insisted was wholly unnatural. This dulness consisted in a slowness of thought, which made him appear very stupid. It took him some time to appreciate the meaning of questions, and it was an effort to answer them. This effort was not due to any actual disturbance of speech, any loss of words, or any difficulty in pronunciation, though he complained that he could not talk as fluently or rapidly as heretofore. The condition was therefore in no sense an aphasic one, but could only be spoken of as a slowness in mental processes. His comprehension was good and his conclusions were correct, when he had time to think, but rapid mental action was impossible, and if insisted upon he became confused and would say that he could not think. Hence he distrusted his own mental power, and said that he did not think that his judgment was as good as formerly. He was disinclined to occupy himself in any way, and sat in a listless manner, saying nothing for hours at a time. He would often sleep in the daytime, though at night his sleep was often broken by his pain. It was not easy for him to hold his attention to any subject continuously for any length of time. His mental state might be termed a dull listlessness, and gave the impression that he was a sick man.

Careful examination detected the existence of a *slight right hemiplegia*; his face was slightly flattened and slow in motion on the right side; his hand was somewhat awkward and clumsy, the power being 140 by the dynamometer, that on the left being 160. He dragged the toe slightly in walking, though his gait was not noticeable. He had great exaggeration of the knee-jerks and marked ankle clonus. He complained of a feeling of numbness, both in the hand and foot, but there was no objective anæsthesia.

Diagnosis. From these symptoms a diagnosis was reached of a brain tumor. The situation of the tumor was not easily determined. The slight right hemiplegia indicated that it was in the left hemisphere of the brain, near to but not within the motor region. The hemiplegia had appeared long after the other symptoms, hence it was evident that the motor zone had been only reached when the tumor had become large. The position of the headache and of the tenderness to percussion over the frontal region, and the existence of the mental symptoms described, appeared to indicate the frontal lobe as the probable situation. This was confirmed by the absence of anæsthesia or of hemianopsia or of sensory aphasia, all of which conditions would have been likely to have been present in a tumor situated near to but behind the motor zone in the parietal lobe. The mental symptoms were considered of very great importance in the diagnosis of a frontal lobe lesion.

A study of twenty-three cases of disease of the frontal lobes of the brain,¹ made by one of us in 1884, showed that decided mental disturb-

¹ Starr: "Cortical Lesions of the Brain," THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, April, 1884.

ance occurred in half of the cases. At that time the following conclusions were reached: "The form of mental disturbance in lesions of the frontal region does not conform to any type of insanity. It is rather to be described as a loss of self-control and a consequent change of character. The mind exercises a constant inhibitory influence upon all action, physical and mental, from the simple restraint upon the lower reflexes, such as the action of the sphincters, to the higher control over the complex reflexes, such as emotional impulses and their manifestation in speech and expression. This action of control implies a recognition of the import of an act in connection with other acts; in a word, it involves judgment and reason, the highest mental qualities. By inhibiting all but one set of impulses it enables one to fix the attention upon a subject and to hold it there. It seems probable that the processes involved in judgment and reason have, for their physical basis, the frontal lobes; if so, the total destruction of these lobes would reduce man to the state of an idiot; their partial destruction would be manifested by errors of judgment and reason of a striking character. One of the first manifestations would be a lack of that self-control which is the constant accompaniment of mental action and which would be shown by an inability to fix the attention, to follow a continuous train of thought or to conduct intellectual processes. It is this very symptom that was present in one-half of the cases collected. It occurred in all forms of lesion: from injury by foreign bodies, from destruction by abscess, from compression and softening due to the presence of tumors, and, therefore, cannot be ascribed to any one form of disease. It did not occur in lesions of other parts of the brain here cited. But its presence in such a large number of these cases warrants the suggestion that in cases of suspected lesion of the frontal lobe, the mental condition of the patient as shown by his acts of judgment and reason should be carefully examined, and a change of character or behavior accurately noted."

Ferrier, in his Croonian lectures in 1890, again called attention to the occurrence of such mental symptoms in connection with diseases of the frontal lobes.

Welt (*Alienist and Neurologist*, April, 1890) concluded from a study of eight cases under his observation, that changes in character and disposition are characteristic of lesions in the frontal lobes. He says they may be the only symptoms present.

W. Gilman Thompson (*Medical News*, May, 1891) has described changes in temperament and alterations in the intellectual sphere occurring in three cases of tumor of the frontal lobes under his observation.

Schoenthal has also recorded a case diagnosticated as hysteria on account of the mental peculiarities and lack of self-control, in which a large tumor of the frontal lobe was found after death.

Griffith and Sheldon (*Journal of Mental Science*, 1890, p. 223), in

reporting a case of tumor invading the median surface and base of both frontal lobes, in which mental symptoms were absent, call attention to the fact that mental symptoms occur chiefly when the cortex of the convexity of the frontal lobes is invaded; and this statement is borne out by my own collection of cases before alluded to.

The review of these cases, therefore, pointed to the conclusion that mental symptoms are likely to be produced by a tumor in the frontal region, and this fact was considered of much importance in determining the situation of the tumor in this case.

The diagnosis of the nature of the tumor was somewhat difficult. The existence of specific disease pointed to gumma, and made it seem proper to try the effect of specific treatment; he was therefore put on inunctions of mercury and increasing doses of iodide of potash, which was carried to the point of three hundred grains a day. This treatment was pursued without much apparent change in his condition. He then escaped from my observation for two months, but returned about the first of June to the clinic.

It was then found that his headache was still severe, was still localized in the left side of the forehead. It was found that his sight was much worse, so that he was nearly blind in the right eye and could not read letters with the left eye. His hemiplegia was more marked; his face was flatter on the right side; his arm and hand more clumsy, and there was a decided dragging of the right foot. He complained that his right leg was getting stiffer all the time and that it felt dead. He said that he had recently been having twitching in the right leg, as often as two or three times a day. He also said that at times his hand became clenched without his power to resist it, but he denied the existence of any clonic spasms. He had had some difficulty in micturition during the past months, it being impossible for him to control his bladder perfectly, the urine flowing unexpectedly. His speech was slower, and there was a noticeable tendency to the malposition of words in sentences, which, however, he noticed himself and corrected; he would often say "no" for "yes," and *vice versa*. His mental activity was evidently much weaker than it had been five months before.

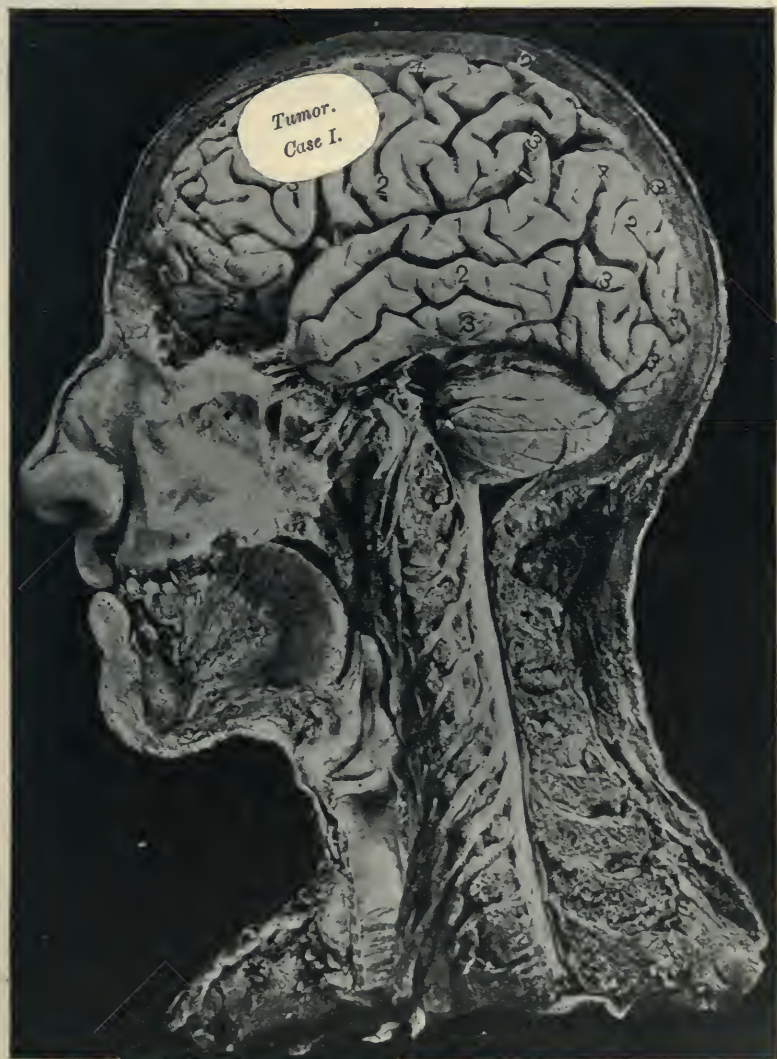
Under these circumstances it seemed evident that specific treatment had failed of effect, and he was induced to enter Roosevelt Hospital and submit to an operation.

Operation. The operation was performed by Dr. McBurney on June 23, 1892. Ether anæsthesia. A semi-elliptical incision was made in the scalp, outlining an area which measured about three inches in each direction, the attached base of the flap being below. The centre of the flap coincided with a point an inch and a half anterior to the fissure of Rolando, opposite the junction of its upper and middle thirds.

The tumor was believed to occupy the posterior part of the second frontal convolution, just anterior to its junction with the anterior central convolution. The hemorrhage caused by this incision was excessive, certainly treble the usual amount, and required a large number of pressure-forceps and ligatures for its control. A button of bone, one inch in diameter, was then removed with the trephine from the centre of the area exposed by turning down the flap. This opening was enlarged with rongeur forceps downward and forward until it measured

two inches by one and three-quarters. (Fig. 3.) The dura appeared to be thickened and was unnaturally pale, but pulsation seemed normal

FIG. 2.



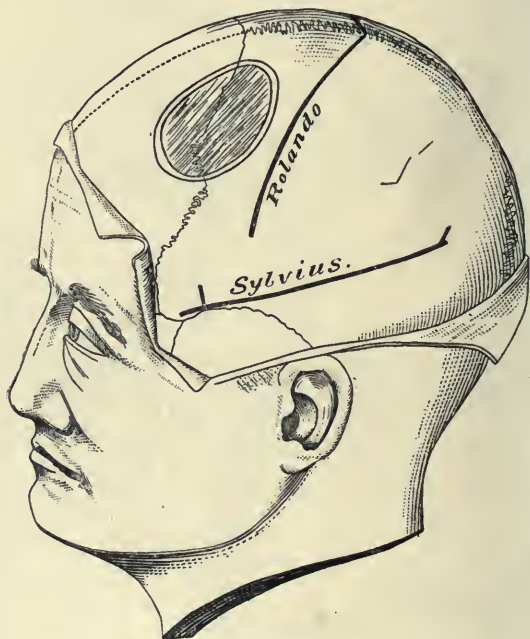
Situation of a tumor, shown in a photograph from Fraser's *Guide to Cerebral Operations*.
The size is in exact ratio.

and no bleeding was noted. Profuse hemorrhage occurred from the veins of the diploë, and no little difficulty was met with in its manage-

ment. The largest of these veins were occluded only by plugging their orifices firmly with small bits of sponge.

The dura mater was then incised near the edge of the opening in the bone and turned down as a flap. It was quite adherent to the surface of brain beneath it, which was uniformly dark in color and very vascular. At the first inspection the surface seemed to be that of a much-congested ordinary cortical substance. It was, however, firmer in consistence than was normal, and a good-sized section was removed with the knife; it was then clear that the whole area exposed was tumor

FIG. 3.



tissue. At the end of the section removed, a distinct capsule was met with; following this with finger and blunt scissors, it was not difficult to completely enucleate the large tumor, which extended in every direction beyond the edges of the opening already made in the skull. (Fig. 3.) The tumor was ovoid in shape, measuring two and one-half by one and three-quarters inches. (Fig. 4.) It was completely enclosed by a capsule, and after its removal a large cavity in the cortex remained. This cavity bled profusely at every point; the hemorrhage requiring for its control complete packing with iodoform gauze. The flap of integument was partially replaced and sutured at the sides only, a large, loose antiseptic dressing being applied over all.

Loss of blood and shock produced a marked effect upon the patient's general condition before the close of the operation, and both rectal and hypodermatic stimulation were actively applied, and after the patient's

removal to bed he was given constant attention and every effort was made to improve his condition. After a large intra-venous infusion of normal salt solution temporary marked improvement was noted, but the pulse soon failed again and death occurred about midnight, eight hours after operation.

The exact situation occupied by the tumor is shown in Fig. 5. It involved the posterior part of the second frontal convolution, the adjacent portion of the first frontal, and the upper half of the anterior central convolutions. The entire anterior central convolution must have been compressed to some degree, and indirect pressure must have been exerted upon the third frontal convolution below the tumor. The situation of the tumor corresponded, therefore, very accurately to the diagnosis made before operation, but the size of the mass was much greater than had been anticipated. After hardening in Müller's fluid

FIG. 4.
1 inch. 2 inches. 2½ inches.



The tumor in Case I. With inch measure.

and alcohol, it displaced 50 c.c. of water, weighed 4 grammes, and measured $2\frac{1}{2} \times 2 \times 1\frac{1}{2}$ inches. The tumor was carefully examined by Dr. Eugene Hodenpyl, and was reported by him to be a true sarcoma, consisting of a large number of delicate bloodvessels and rather large irregular, but not branching, cells closely packed together with very little intercellular substance.

An earlier operation, when the tumor was much smaller and the vascularity of the tissues much less, would very probably have been successful. It was proposed to the patient in February, four months before it was done. The delay, which he insisted upon, was more readily submitted to because of his specific history, which induced us to give him the benefit of the doubt and to try anti-syphilitic treatment. If Horsley's dictum had been accepted, namely, that gumma is not curable

by medicine and should be operated for (a dictum, however, which the experience of others in several cases does not support), an earlier operation would perhaps have been undertaken. The size of a brain tumor has undoubtedly much to do with determining the amount of shock resulting from its removal.

FIG. 5.

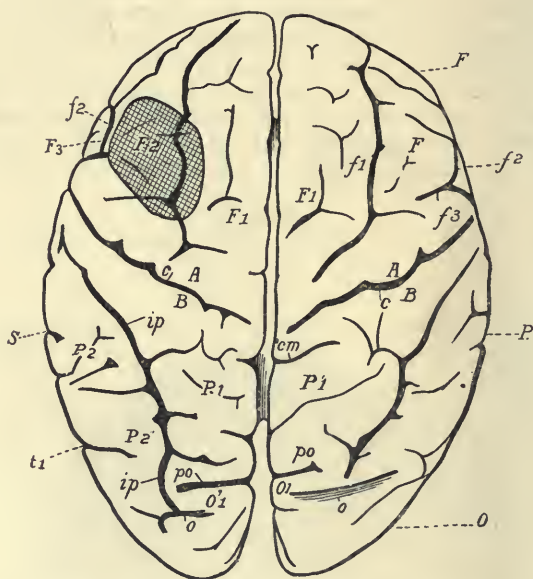


Diagram of the superior surface of the brain, to show the situation of the tumor in Case I.

This tumor was about as large as one removed by Dr. Keen and described in *THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES* for November, 1888, and another operated upon by Prof. E. Hitzig, an account of which was published in the *Berliner klinische Wochenschrift* for July 18, 1892.

SUMMARY.—In this case the diagnosis of the tumor of the brain was made from the general symptoms—headache, optic neuritis, and tenderness to percussion of the head, and from the local symptoms—mental dulness, slowness of speech, slight right hemiplegia with subjective numbness and occasional twitching in the paralyzed limbs. The situation of the tumor was determined by the slow onset of the hemiplegia, by the very marked mental symptoms, and by the location of the tenderness upon the head. Attention has already been called to the value of the mental symptoms in the localization of the tumor, and no further comment upon them is necessary. This is the first case, however, in which operative interference has been so distinctly directed by the existence of mental symptoms.

It is interesting to note that the first symptom in this case was a convulsion beginning with a turning of the head and eyes to the right. The motor centres for movements of the head and eyes have been located by Horsley at the posterior part of the second frontal convolution, and it was exactly in this region that the growth must have commenced. The absence of serious paralysis at any time—for the man was perfectly able to walk, to feed himself, or even to write, up to the day of the operation—shows that the pressure upon the motor zone of the cortex was not sufficient to arrest its function. And it is interesting to observe that this pressure having been exerted very gradually did not at any time induce cortical spasms, for the slight twitching of hand and leg, which were complained of late in the history, were not of the nature of Jacksonian epilepsy. The tumor lay upon the cortex in a capsule of its own, and did not produce any apparent pathological changes in the cortex itself, though this supposition could not be confirmed by microscopical examination. There was no evidence of softening or encephalitis. The amount of pressure or compression which the cerebral tissue will admit without manifesting evidence either of irritation or of arrest of function was peculiarly illustrated in this case. The situation was exactly such as to have caused agraphia, had the theory of a motor centre for writing independent of the hand centre been correct, but there was no agraphia present.

Tumors of the cerebellum are not at all infrequent, and, as a rule, are easily diagnosticated. The following histories illustrate the symptomatology of the disease, and the difficulty in the way of its exact localization in the cerebellum and in the way of surgical interference for the removal of tumors of the cerebellum.

CASE II. *Fibro-sarcoma of the cerebellum and pons Varolii; staggering away from the side of the tumor; operation; death.*—Male, aged thirty years; was under my observation from January, 1890, until December, 1891, when he died. He was referred to the Nervous Department of the Vanderbilt Clinic by Dr. Weeks. When first seen he was suffering from severe frontal and occipital headache; from vertigo, which was much increased by moving the head suddenly, or by lying down; from tinnitus aurium; from numbness in the left side of the face and in the mouth; and from a very continuous feeling of drowsiness and dulness. These symptoms had developed gradually during the preceding three years, and within a year he had also noticed double vision and a gradually increasing blindness. His friends said that his speech had become slow and thick.

Examination showed a large, very dull, stupid man, with prominent eyes, the left one deviating outward, dilated pupils, and marked nystagmus on lateral movement of the eyes. Dr. Weeks had found well-marked choked disks and a diminution of the visual fields. There was some slowness of speech, which was accounted for by his mental dulness, there being no evidence either of aphasia or of paralysis of the tongue.

There was no disturbance of sensation, or of motion, or of reflex action, and there was no ataxia in his gait. The existence of headache, vertigo, tinnitus aurium, nystagmus, diplopia, and choked disks established the diagnosis of a cerebral tumor, but no conclusion regarding its localization could be reached. That the tumor was not a gumma was admitted, as he denied all specific infection, yet he was put upon mercury and iodide of potash on the supposition that he might have acquired the disease without his knowledge.

During the year 1890 the symptoms continued, and gradually increased in intensity, so that by the first of October he had become quite blind, with well-marked optic atrophy; and also deaf in the left ear, in which ear the tinnitus aurium had been intense. By this time, also, local symptoms had developed, which gave an indication of the site of the tumor. There was a considerable degree of staggering in walking, with a tendency to fall forward and toward the right, and a marked tendency to turn toward the right in walking. In addition, there was some weakness in his right hand, the dynamometer registering only 39, while it registered 60 in the left hand. There was no ataxia or disturbance of sensation in the limbs. There was no apparent difference in the power in the legs, but the knee-jerk was exaggerated on the right side, and a slight clonus was obtained in the right foot.

The staggering was of the kind observed in cerebellar disease—a gait like that of a drunken man, without falling, but with every appearance that the balance was uncertain. The tendency to turn and to fall to the right was noticed on every occasion on which he was tested.

Diagnosis. The staggering seemed to prove that the disease was located in the cerebellum, and the question arose whether its direction, toward the right, pointed to the side on which the tumor lay. Ross makes the statement that staggering is toward the side of the tumor. Out of eighteen cases of cerebellar tumor in which staggering toward one side was observed during life, which I have been able to find after careful search in the literature, fourteen were found to have had the tumor on the side opposite to the staggering—*i. e.*, 77 per cent.—and four were found to have had the tumor on the side toward which the patient staggered. While staggering is a symptom commonly found in cases of cerebellar tumor, staggering in one particular direction is a symptom by no means frequent, being recorded in but three cases in a collection of ninety-six cases of tumors of the cerebellum in children, made by me three years ago, and in only nine of Bernhardt's ninety cases. It is certainly more commonly observed when the disease involves one of the middle peduncles of the cerebellum, and therefore has been recorded in some cases of tumors upon the base involving the side of the pons Varolii. But here, also, there seems to be no absolute rule. I have recorded¹ two cases of unilateral disease of the pons with marked unilateral cranial nerve palsies in which the patients staggered toward the side of the lesion; but there are other cases on record in which the staggering was away from the lesion.

¹ Familiar Forms of Nervous Disease, pp. 119-123.

The most recent investigations upon the physiology of the cerebellum are contained in the elaborate work by Luciani, published last year.¹ In regard to the symptoms of rotation produced by the destruction of one-half of the cerebellum, he says that rotation may be of two kinds: the first due to irritation, the second due to paralysis.

1. Irritative rotation is caused by traumatism or an inflammatory condition of the peduncular fibres. It consists in rotation from the wounded toward the sound side, for in this instance the want of equilibrium is generated by a unilateral exaggeration of the cerebellar influences transmitted by the irritated peduncle.

2. Paralytic rotation is caused by the simple section of a peduncular strand. It consists in rotation from the sound toward the wounded side, because here the want of equilibrium arises from the fact that one-half of the centres in connection with the wounded peduncle suddenly lose their cerebellar influences, whilst others retain it.

In the light of these experiments, and the conclusions from them, it is evident that in those cases in man in which the patient has staggered away from the lesion, the condition has been one of irritation, while in those cases in which the patient has staggered toward the lesion the condition has been one of destruction in the middle peduncle of the cerebellum. It is as yet impossible, however, during life to determine from the symptoms, in any individual case we are dealing with, whether there is irritation or destruction of the cerebellar peduncle, and therefore, as already observed from the direction of the staggering, any positive conclusion as to the location of the disease cannot be reached.

While the staggering in this case indicated that the cerebellum was affected, its direction to the right was not considered sufficiently diagnostic to decide absolutely the question regarding which side was involved, though it pointed strongly to the left side.

That question seemed, however, to be decided by a study of the other symptoms. The patient had complained early in the disease of pain and numbness in the left half of the face, though at no time did examination show any anæsthesia. He also had much tinnitus in the left ear, which had been followed by progressive deafness. His headache, which had, at first, been frontal, was later referred with much constancy to the left occipital region, and in speaking of it he habitually put his hand back of his left ear. The weakness of the right hand and the exaggeration of the spinal reflexes on the right side, taken in connection with these left cranial nerve palsies, appeared to indicate some pressure on the left side of the pons and medulla.

Thus the staggering to the right, the left cranial nerve palsies, and

¹ L. Luciani: *Il Cervelletto*, Firenze, 1891. Deutsche Ausgabe von Dr. M. O. Fraenkel, Leipzig, 1893.

the right hemiplegia, all pointed to a lesion in the left side of the posterior cranial fossa.

The diagnosis was therefore made of a tumor on the left side of the cerebellum. The negative result of specific treatment indicated that it was not a gumma, and the very slow progress of the case indicated that it must be a slowly forming tumor, probably sarcoma, inasmuch as such tumors are more common than any other kind.

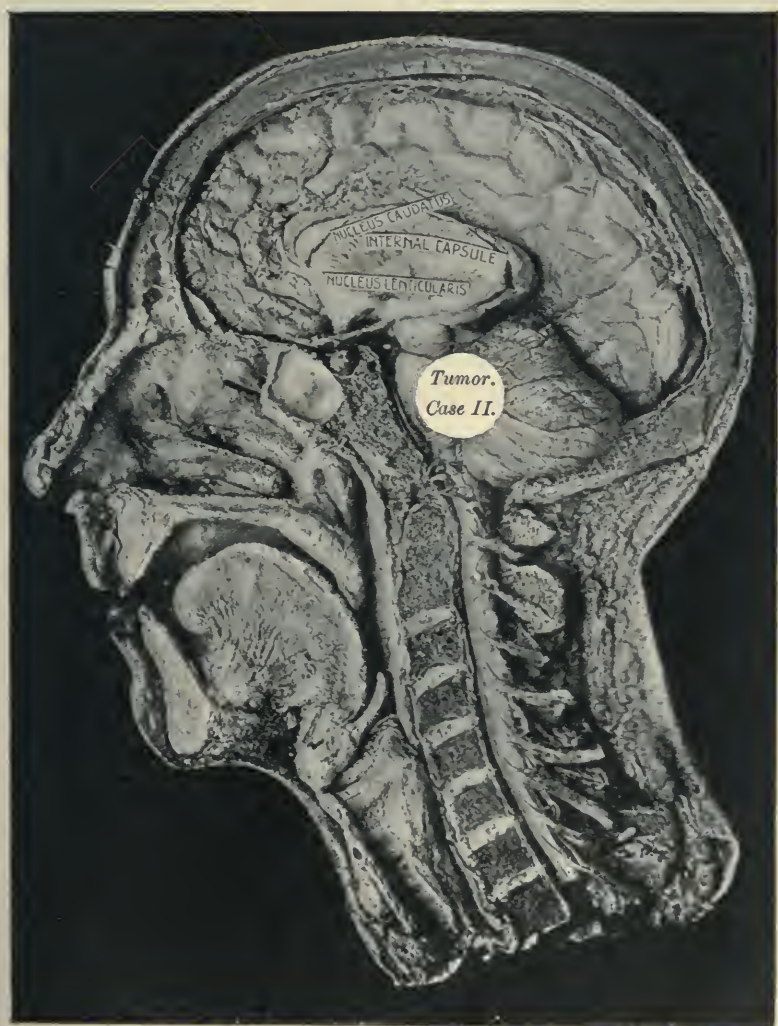
During the following year, from October, 1890, to November, 1891, the patient was seen occasionally, being apparently in a stationary condition. Finally he was induced to enter the Roosevelt Hospital for operation. And he was then quite willing to submit, though knowing the dangers, because his life was a burden, for he was blind and partly deaf, and suffering from severe headache, vertigo on any movement, and such exaggerated staggering that he could not go about. A careful examination in the hospital on December 1, 1891, confirmed the existence of all the symptoms hitherto mentioned, but failed to elicit others.

Operation by Dr. McBurney on December 3, 1891. Ether anæsthesia. A vertical tongue-shaped flap was marked out with the knife over the left half of the occipital bone. The upper free convex border of this flap corresponded nearly to the superior curved line of this bone. The attached base was on the back of the neck, about opposite the second cervical vertebra. The incision was carried down to the periosteum, and all the coverings were removed in one flap. Experiments on the cadaver had satisfied the operator that the safest and most convenient method of entering the cerebellar fossa was by the use of the chisel and mallet. This method was adopted here, and an opening about one and a half inches in diameter was made through the thin bone, care being taken to be far enough away from the large venous sinuses. The dura mater was not diseased, but bulged very strongly through the opening in the skull in such a manner as to at once suggest great intracranial pressure. Protrusion of cerebellar tissue was still more marked after the dura had been turned back as a flap from over its surface. Otherwise, however, the surface of the cerebellum was normal in appearance, and palpation failed to give evidence of the existence of tumor. It was found to be quite easy to introduce the finger for some distance into the skull on all sides of the cerebellar hemisphere, to thus examine a large part of its surface, and to distinctly palpate the lateral and vertical sinuses. But nowhere could the existence of tumor be demonstrated. So much protrusion of cerebellar tissue existed that it was necessary, in order to close the opening in the skull at all satisfactorily, to shave off the excess, which was done with the less compunction, as even the gentle manipulations practised had somewhat injured the delicate surface convolutions. Hemorrhage throughout the operation was very moderate and easily managed. The flaps of dura mater and overlying soft parts were then replaced, fastened in all deep parts with catgut, the skin wound being sewed completely with silk. A wet bichloride gauze dressing was applied over all, and the patient was removed to bed in excellent condition.

Convalescence was perfectly satisfactory, and on December 9th, six days after operation, the temperature being 99° and the pulse 100, the dressing was changed for the first time. Primary union was found throughout the whole extent of the wound, and all sutures were removed.

During the following night the patient fell out of bed, and immediate examination revealed the presence of a large blood-clot beneath the skin flap. No other injury seemed to have resulted from the fall, but

FIG. 6.



The situation of the tumor in Case II., shown on a Fraser photograph. The difficulty of removal is evident from its deep situation.

at 5 P.M. on December 10th a chill occurred, followed by a temperature of 103°.

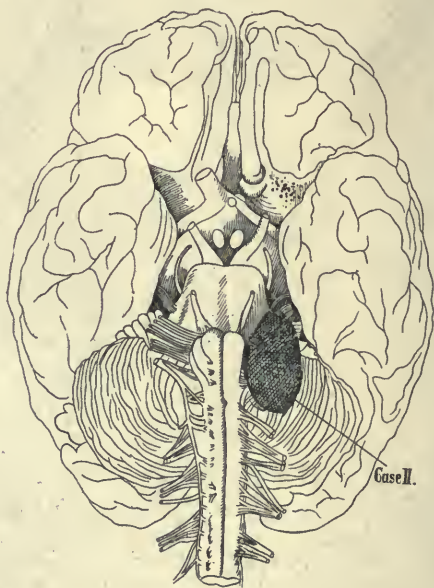
Difficulty in swallowing was then noted, and although at the end of

two days the temperature fell to 99°, stupor gradually increased and involuntary evacuations of rectum and bladder began. The wound remained aseptic throughout, but the stupor deepened into coma, and the patient died on December 15th with a temperature of 105°.

The *autopsy* showed the presence of a tumor, a gliosarcoma, whose limits were quite distinct from the cerebellar tissue, though it was not encapsulated. (See Fig. 6.)

It lay on the base, and compressed the left hemisphere of the cerebellum, and especially its anterior inferior (ventro-cephalad) surface, and also pressed upon the left half of the pons Varolii at its lateral part. The left crus was slightly indented by the tumor, and the fifth nerve had been flattened out by it without being so pressed upon as to be degenerated. The auditory and facial nerves were also compressed by the lower part of the tumor. (See Fig. 7.)

FIG. 7.



The situation of the tumor was such as to have made it absolutely impossible to reach it by operation, unless, indeed, the certainty of the situation of the tumor had been so complete as to justify full section of the cerebellum. It was almost identical in situation and appearance with a tumor reported by Wollenberg in the *Arch. für Psych.*, xxi. p. 791. Its situation as related to the surface is shown in Fig. 6, which is made by drawing the tumor in one of Alexander Fraser's plates.

CASE III. *Glioma of the cerebellum; characteristic staggering; operation; death.*—A little girl of seven years of age had suffered for a year from severe headache all over the head, but chiefly in the forehead, from severe vomiting, and from gradually advancing blindness, due to

a progressive optic neuritis. For three months before she was seen, it had been difficult for her to walk on account of a tendency to stagger and on account of dizziness, which was undoubtedly due in part to nystagmus, which was observed early in the history. The staggering was very marked, so that during the last month she could not walk without aid. She did not appear to stagger in any one direction constantly, but there was some tendency to fall backward and slightly to the left. She complained at times of earache in the right ear, but there was no evidence of cranial nerve palsy or of hemiplegia.

The diagnosis of cerebellar tumor in this case was quite evident, but the only clue to the position of the tumor was the tendency to stagger backward and to the left. It was thought probable that the tumor was in the vermiform lobe of the cerebellum, more likely upon the right than upon the left side. The absence of cranial nerve symptoms showed that it was not near the base. The operation was therefore undertaken.

Operation. The operation was done by Dr. McBurney on December 29, 1891. Ether narcosis. A horseshoe-shaped incision with the convexity upward was made over the right half of the occipital bone. The upper part of the incision lay a little above the superior curved line of the bone, and the flap, which was then turned down, included all of the soft tissues excepting the periosteum. The base of the flap was left attached to the upper part of the neck.

With chisel and mallet a considerable plate of bone was removed from over the centre of the cerebellar fossa, and the opening was then enlarged with rongeur forceps as much as was safe, having due regard for the venous sinuses. The dura protruded forcibly, but otherwise appeared normal. A large flap of dura was then cut and laid back, revealing only normal cerebellar convolutions. Examination of the sides and under surface of the cerebellum gave no information. A probe was then passed some distance, about one and a half inches, into the brain substance, but no abnormal resistance was encountered.

An aspirating-needle introduced about one-half inch from the median line, and parallel with the base of the skull, entered a cyst from which two drachms of clear serous fluid were withdrawn.

A second introduction of the needle failed to detect the cyst, and it was deemed unwise to make further exploration. The flaps were then replaced, being stitched deeply with catgut and superficially with silk. Hemorrhage during the operation was not troublesome, but before its close the patient showed the effects of shock. She rallied well, however, after rectal stimulation, and on the day following operation seemed about as well as on the day before it; at intervals complaining of headache only. Two days later complaint was made of pain in the ears; the wound was dressed and found to be aseptic. The temperature since operation had remained normal.

On January 4th, six days after operation, vomiting occurred repeatedly, the pulse became very weak, stimulation had no effect, and the patient died suddenly in a convulsion at midnight.

The *autopsy* revealed a large gliosarcoma, $2\frac{1}{2}$ by 2 by 1 inch, which occupied the vermiform lobe of the cerebellum and extended into both hemispheres, chiefly into the right one. It lay just under the superior surface of the cerebellar cortex, but it nowhere reached the surface of the cerebellum. It projected downward, compressing the fourth ven-

tricle. Its consistence was about that of the cerebellum, and in its centre was a cyst which had been evacuated by the aspiration.

Certain comments upon these two cases seem warranted. First: *As to the diagnosis.* It is easy to diagnosticate cerebellar disease—headache, vomiting, vertigo, blindness, and staggering being the symptoms almost uniformly found. It is as yet almost impossible to locate the disease accurately within the cerebellum. In 16 cases out of 20, that is, in four-fifths of all cases recorded, the staggering, when uniformly toward one side, has been away from the lesion; yet in one-fifth of the cases and in several cases of disease in the pons Varolii involving the basal surface of the cerebellum, the staggering has been toward the lesion. From the direction of the staggering alone, therefore, it is impossible to determine exactly the side of the disease. The symptoms of the greatest importance in the location of cerebellar disease appear to be those arising from the involvement of the cranial nerves upon the base. The disease commonly lies upon the side upon which these cranial nerves are affected. Such symptoms are usually due to direct pressure upon nerves on the base. They are sometimes due to displacement of the entire cerebellar axis by indirect pressure from a distance. If the cranial nerve symptoms are on the side away from which the patient staggers, then there appears to be a double probability that the tumor is on the side on which they appear. This was the condition in my first case, and the autopsy proved the truth of the probable diagnosis. The complete absence of cranial nerve palsies indicates that the tumor is not near the base. As staggering only occurs when the vermiform (middle) lobe is invaded by the tumor, its absence would show that the tumor did not lie near the median line.

The localization of disease in the cerebellum being therefore a matter which cannot be positively determined from the symptoms, any effort at its removal must necessarily be tentative. There are many cases reported of tumor of the cerebellum in which it is perfectly evident that an operation would have been successful. In these cases the tumor lay in the posterior fossa directly beneath the bone, was not adherent to the cerebellum, and could have been easily removed. An exploratory operation, therefore, would have succeeded in these cases. In a disease which is necessarily hopeless any means certainly should be used which may offer a possibility of relief. Therefore, in these cases of cerebellar tumor, even though the diagnosis be somewhat uncertain, an exploratory operation seems to be advisable.

Secondly: *The dangers and difficulties attendant upon an operation for cerebellar tumors* are much greater than for tumors of the cerebral hemispheres. The muscular tissues which have to be divided in order to lay bare the occipital bone are thick and richly supplied with blood-

vessels, therefore hemorrhage is free and not easily controlled. After the muscular tissues have been cleared away and the bone laid bare, the bony surface open to operation is exceedingly limited, the sinuses leaving but a small portion of the bone open to the trephine. The part accessible is a triangle, rarely more than two inches in its greatest diameter, on each side of the median line. The opening through the occipital bone gives access to a portion of the posterior inferior surface only of the cerebellum; its anterior inferior surface and the greater part of its superior surface are wholly inaccessible. The fossa in which the cerebellum lies is small and the organ is held down into it tightly by the tentorium; it cannot therefore be freely pressed aside by the exploring finger even in the normal state, and when the intra-cranial contents are increased by a tumor, the pressure in the fossa is so great that the opening of the skull is apt to be followed, as in my first case, by an immediate bulging of the cerebellar tissue, which prevents exploration. It is true that the cutting off of such tissue appears to cause no serious symptoms, yet it cannot be absolutely harmless. The difficulties of the operation are therefore not small.

The records of cases operated upon for cerebellar tumor are by no means encouraging. Up to the present date eleven such cases have been recorded. These are as follows:

CASE I. (Bennett May: *Lancet*, April 16, 1887, i. 768.)—Male, aged seven; suffered in April, 1886, from headache, chiefly frontal, and vomiting; then gradual failure of sight developed, and in July he was nearly blind. In July paralysis of the right sixth nerve was noticed, and the eyes were turned to the left. Optic neuritis was then found in both eyes. At this time the gait became affected; he staggered, and tended to fall backward and to the left. His mind was clear. In August the headache and vomiting became severe, he could not stand, and the head was retracted. In October he had become totally blind and nystagmus had appeared. There was loss of knee-jerk on the right side and general weakness, with great emaciation.

He was then operated upon by Mr. May. The cerebellum was exposed on the right side of the median line, and appeared to be healthy, but bulged, and was felt to be hard at one spot. After incision at this spot a tumor was felt one inch below the surface. This was dug out with the handle of a spoon. It was larger than a pigeon's egg, hard on the surface, caseating at its centre. Hemorrhage was slight, but the child died of shock a few hours afterward.

CASE II. (Horsley: *British Medical Journal*, 1887, i. 865.)—Male, aged eighteen; had suffered from headache, vomiting, optic neuritis, increasing weakness of all his limbs, especially of the left arm and leg, vertigo, and typical staggering gait of cerebellar disease. He also had epileptoid attacks, with turning of the head and eyes to the right. His mental state was good, but he was much emaciated and had been in bed a year. Dr. Bastian made the diagnosis of a tumor involving the right lobe of the cerebellum, and, as a last resort, Mr. Horsley attempted its removal. After trephining, a tubercular tumor was found in the right lobe of the cerebellum and removed. It weighed seven drachms. The patient sank gradually, and died nineteen hours after the operation.

CASE III. (Suckling: *Lancet*, 1887, ii. 656.)—Female, aged twelve; complained of headache and vomiting for eighteen months, then for nine

months of increasing weakness of the right arm and leg, and then for three months of severe frontal pain over the right eye. During the last month she had noticed an inability to turn the eyes to either side, and both double and dim vision. On admission to the hospital the left pupil was found to be larger than the right; there was nystagmus on any attempt at movement of the eyes; there was loss of conjugate motion of eyes to the right, and impairment of motion to the left; there was great impairment of vision, with double optic neuritis. Weakness of right extremities with diminution of knee-jerk, staggering gait with tendency to stagger to the right and to fall forward, and marked tremor of the right arm on any motion, were found. There was a slight paralysis of the left side of the face, but the tongue deviated to the right. Headache, vertigo, and vomiting were very severe and constant. The diagnosis of cerebellar tumor was made, and an operation was considered advisable.

The occipital bone was trephined over the left side and the cerebellum exposed. It bulged out of the wound, and its tissue appeared darker and softer than normal. A part of the cerebellar substance was cut away and the wound was dressed. The patient went into a state of collapse and died of exhaustion in forty-eight hours. The autopsy showed that the glioma had occupied the entire left lobe of the cerebellum and had invaded the middle lobe also.

CASE IV. (Maunsell: *New Zealand Medical Journal*, 1889, ii. 151.)—Male, aged eighteen; had suffered from headache, vomiting, vertigo, and cerebellar ataxia, with reeling to the right. His eyes were very prominent and his vision almost lost on account of advancing optic neuritis. His head and neck were swollen and retracted. He was deaf in the left ear and had lost his sense of smell. His pupils were dilated; he had convulsions in the right arm and leg. He had lost control of the sphincters. He was trephined on the 12th of February, 1889, over the left hemisphere of the cerebellum. An hydatid cyst, four by three inches in size, lying beneath the tentorium, was found and evacuated. He recovered from the operation, but remained in a condition of blindness and deafness.

CASE V. (Maudsley and Fitzgerald: *London Medical Recorder*, June, 1890. Quoted by Knapp.)—Male, aged twenty-eight; suffered from headache, vomiting and vertigo, and staggering gait; optic neuritis had produced blindness, and he was also deaf. There was left facial paralysis and awkwardness of the left side. He was trephined April 20, 1888, over the left lobe of the cerebellum. A solid nodule was found fixed to the bone, but this could not be removed. Much cerebellar tissue escaped from the wound. The patient recovered from the operation, but the blindness and deafness persisted.

CASE VI. (Springthorp and Fitzgerald: *Australian Medical Journal*, November 15, 1890.)—Male, aged thirteen; after a blow on the right side of the forehead, suffered from headache, vomiting, uncertain gait, optic atrophy, and convulsions beginning with head and eyes turning to the right. He was trephined over the right lobe of the cerebellum. Glioma of the middle lobe was discovered. Much serous fluid was evacuated. The glioma could not be wholly removed and the patient died of shock.

CASE VII. (Bullard and Bradford: *Boston Med. and Surg. Journ.*, April 30, 1891.)—Female, aged six; suffered from vomiting, vertigo, headache, optic neuritis, cerebellar gait, partial paralysis of the right leg, increasing later to total paralysis of all the limbs, with increase of the reflexes. The operation was undertaken for the removal of the tumor of the cerebellum, but on laying bare the bone a hole was found, over the torcular, opening into the sinus, and hemorrhage from this could not be stopped. The tumor was found at the autopsy.

CASE VIII. (Lampiasi: *Wien. med. Wochenschr.*, May 19, 1889.)—Child, aged two, general symptoms of brain tumor, optic neuritis, exophthalmus, convulsions. Exploratory trephining over the cerebellum. Failure to find the tumor. Death four days later. Tubercle the size of an egg found in the left lobe of the cerebellum.

CASE IX. (Knapp and Bradford: *Journ. of Mental and Nervous Diseases*, January, 1892.)—Male, aged twenty-eight; suffered from headache, vomiting, optic neuritis, blindness, deafness, tenderness in the right temporal region, paræsthesia of the mouth and hands. He was trephined by Dr. Bradford, over the tender spot on the right temple. Nothing was found. A left hemiplegia slowly developed after the operation, and two months later he died. The tumor was found in the left lateral lobe of the cerebellum.

CASE X. (Stewart: *Pittsburg Medical Review*, November, 1892.)—Male, aged thirty-nine; suffered for eight months prior to his operation from headache, vertigo, vomiting, and a staggering gait, with tendency to fall backward. He also developed optic atrophy and great mental dulness.

Finally, he became unable to stand, or even to sit up in bed, on account of his tendency to fall backward. He also had tetanoid spasms of the neck and arms, which were worse upon the right side.

There were no cranial nerve palsies. The diagnosis being made of a tumor of the cerebellum, Dr. Stewart trephined over the left hemisphere. The cerebellum bulged greatly, but appeared to be normal, and a puncture with a hypodermatic needle failed to reveal the existence of a tumor, or of fluid. The wound was closed.

The autopsy, two days later, showed the existence of a large gumma in the right hemisphere of the cerebellum.

CASE XI. Potemski (*Italian Congress, Surgery*, 1892; *Annals of Surgery*, December, 1892) reports a case of supposed cerebellar tumor with characteristic symptoms in which two attempts at removal were made. At the first attempt the cerebellum was trephined on the right side; a large amount of fluid was evacuated, but palpation failed to reveal the tumor. After the wound had healed a second attempt was made by trephining over the left side; again, a considerable amount of fluid escaped, and it was thought that a hard nodule could be felt in the region of the vermiform lobe, but this could not be removed. At the time of the report the second wound had healed, but the patient was still suffering from his original symptoms.

Our own two cases bring the total number of operations for cerebellar tumors up to thirteen.

In six cases the tumor was not found at the operation, and the patient died. In one case the tumor was not found, but the patient lived up to the time of the report. In two cases the tumor was removed, but the patients died. In two cases it was found, but could not be removed, and the patients died. In one case it was found, not removed, but the patient lived. In but one case was the tumor successfully removed.

The percentage of deaths after cerebellar operations thus far has been 77 per cent., while that after cerebral operations has been 51 per cent.

CONCLUSION.—If we combine the results of the cerebral operations with those of the cerebellar operations, we find that the total number of patients operated upon for intra-cranial tumors has been eighty-seven, and that of these, forty, or 46 per cent., have proved successful, the patients recovering.

Experience will, doubtless, result in a more favorable outcome as time goes on, and neither neurologists nor surgeons should be discouraged in their attempts to relieve a formerly fatal disease.

THE PREVENTION AND TREATMENT OF CHOLERA BY THE
NAPHTHOLS.

BY D. D. STEWART, M.D.,

LECTURER ON CLINICAL MEDICINE, JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA.

AND

BACTERIOLOGICAL REPORT.

BY GEORGE M. STERNBERG, M.D., U.S.A.,

DIRECTOR OF THE HOAGLAND LABORATORY OF BROOKLYN.

IN again reverting to what I believe may prove a successful preventive against the development of cholera in the exposed and a remedy for the jugulation of the developed disease, when resorted to in the early stage, it must be stated that, as yet, unfortunately, the *experimentum crucis*, careful clinical trial, has not been possible; these suggestions as to the employment of naphthol resting on theoretic data and test-tube experiment only. It is, however, with the desire to obtain the earlier and wider test of the remedy, which on hypothetical grounds so strongly commends itself to me, and which favorable judgment the subjoined bacteriological report of Dr. Sternberg strongly confirms, that I publish this note.

By analogy, it would appear that the most successful mode of coping with cholera infection—undeveloped or in the early stage of the disease—should be one directed at the *materies morbi* while yet the ailment is local in habitation, before systemic intoxication, the result of absorption of chemical poisons formed by the spirillum, is decidedly manifest. At a later period other indications assume chief preponderance. Then attention should be given less to destruction of the spirillum than to the neutralization of its toxine, and antidoting the often overwhelming systemic effects of this poison.

Apparently the most promising treatment of the early stage of cholera, in the light of modern knowledge of the cause of the disease, should be in the line of intestinal antiseptis, and two plans based on effort for the eradication of the spirillum have been suggested—the mechanical, that of evacuation, which has as its chief advocate George Johnson, and that by the employment of a germicide having a specific bacillary action. There is, I believe, slight doubt that the latter is the more rational, since non-disinfectant evacuants cannot effect more than partial removal of the perhaps incalculable number of spirilla usually present in developed cholera, but few or even one of which remaining is capable of enormous multiplication with a renewal and perhaps aggravation of symptoms. Evacuants, too, such as castor oil and calomel, by aggravating diarrhœa and provoking additional hyperæmia of the affected portion of bowel, should tend, theoretically at least, to favor the advance of the disease.

Despite the continued advocacy of Johnson of the castor-oil treatment, extended unbiased trial in past epidemics by skilled clinicians is so overwhelmingly against its utility that it need be mentioned only to be strongly condemned. Calomel, when used in full doses, combines with its mechanical effect an antiseptic action; but this latter is apparently not exerted to a sufficient extent to render this drug of any special value as a disinfectant. The treatment of cholera by massive doses of calomel was in past epidemics thoroughly tried, and, like that by castor oil, found valueless for the control of the disease. In the recent epidemic abroad reports of its use in moderate, frequently repeated doses were more favorable, at least as regards influence on gastro-intestinal symptoms, but the results obtained were not sufficiently encouraging to justify the abandonment of search for a more efficient remedy.

As the prime indication in the early stage of cholera for the arrest of the disease must be that of prompt and thorough destruction of its specific entity, and the creation of an unfavorable nidus for its subsequent pullulation, various antiseptics have been suggested for this purpose, tried and abandoned. Chief among these is salol. While trial of this remedy was yet premature, and the too sanguine were claiming results, unfortunately subsequently totally unconfirmed,¹ I pointed out certain practical objections to its employment as a germicide in cholera that would probably render it wholly inefficient.²

It is obvious, as I have elsewhere stated, that a remedy to be directed with effect against the contagium of cholera should be a more or less ideal intestinal disinfectant—one but slightly soluble and decomposable, yet a germicide in aqueous solution, and both non-toxic and non-irritant in doses amply sufficient to exert a germicidal action. It occurred to me that “hydro”-naphthol, which I was then unaware was an impure beta-naphthol,³ and which I had used successfully for several years in intestinal disorders of bacterial origin, would perhaps fulfil all the above indications not adequately met by other antiseptics suggested or tried during the height of the Hamburg epidemic, such as salol, naphthalin, carbolic acid, creasote, and creolin. As I have elsewhere stated,⁴ I concluded that, in addition to its other valuable properties, as naphthol was related to phenol, belonging to the similar coal-tar group, cholera spirilla

¹ Salol was thoroughly tried in the recent Hamburg epidemic and the consensus of opinion was that, however administered, it was useless as a remedy.

² Medical News, September 17, and October 1, 1892. I suggested that as salol is decomposed by the alkaline juices of the bowel in the duodenum or upper jejunum into its components phenol and salicylic acid, which are promptly converted into soluble, absorbable, and very questionable germicidal salts, sodium carbolate and salicylate, little undecomposed salol or nascent phenol could reach the lower segment of the ileum.

³ This has been demonstrated beyond question. See my article on “The Identity of the Proprietary, so-called ‘Hydro’-naphthol and Impure Beta-naphthol,” Medical News, April 1, 1892.

⁴ Medical News, October 1, 1892.

might also be vulnerable to it. It was, moreover, but slightly soluble in water, and was both non-irritant and non-poisonous in quantity much more than sufficient to thoroughly disinfect the bowel against the ordinary putrefactive organisms. It, in addition, does not readily decompose, and would, therefore, be readily carried unchanged, even in moderate doses, to the affected part of the bowel in cholera, without absorption occurring.

These thoughts suggested trial of the germicidal value of naphthol on the cholera spirillum. This was undertaken for me in the laboratory of hygiene of the University of Pennsylvania, by Dr. Ghriskey. A series of experiments made with samples of "hydro"-naphthol (impure beta-naphthol),¹ demonstrated a distinct antiseptic effect in dilutions 1:7000 parts nutrient culture medium, and a distinct germicidal action in 1:2000 parts within five minutes.

These experiments were made on benign organisms, by long cultivation many generations removed from the virulent spirillum, cultures of the latter not being obtainable in this city. I deemed it especially advisable that the behavior of the so-called hydro- and pure (re-sublimed, medicinal) beta-naphthol, its isomer alpha-naphthol, and one of the salts of beta-naphthol, the benzoate, toward the virulent comma spirillum be ascertained. Dr. Sternberg kindly volunteered to determine this, and has carried out a series of very complete experiments in the Hoagland Laboratory on these. His very satisfactory report, for which I am under great obligation, is as follows:

HOAGLAND LABORATORY, BROOKLYN, N. Y.

February 26, 1893.

D. D. Stewart, M.D., Philadelphia, Pa.:

MY DEAR DOCTOR: In compliance with your request I have made a series of experiments at the Hoagland Laboratory to determine the antiseptic and germicidal value of alpha-naphthol, beta-naphthol, hydro-naphthol, and benzo-naphthol, as regards the cholera spirillum.

My cultures for these experiments are from a case of Asiatic cholera, taken from a Hamburg steamship in the lower bay of New York (in October, 1892), to the hospital at Swinburne Island. The spirillum was isolated by me from the rice-water dejecta of this patient, and both in its morphological and biological character it corresponds with Koch's cultures of his "comma bacillus."

The results obtained are as follows: Alpha-naphthol and beta-naphthol have about the same antiseptic and germicidal value. In the proportion of 1:16,000 both prevent the development of the cholera spirillum in peptonized beef tea, while 1:24,000 fails to prevent development. In the proportion of 1:3000 both destroy the vitality of the cholera spirillum in bouillon cultures, twenty-four hours old, after two hours contact, while 1:4000 fails to destroy this micro-organism in the time mentioned—two hours.

¹ I had desired that similar experiments be made with re-sublimed beta-naphthol, but pressure of laboratory work then prevented.

In experiments made with a solution of 1:1000, added to an equal quantity of a twenty-four hours old bouillon culture—making 1:2000 after mixture—and in which the time of contact varied from five to thirty minutes, alpha-, beta- and hydro-naphthol were found to destroy the cholera germ by fifteen minutes' exposure, but to fail after ten minutes' contact, so that the germicidal value of each of these is similar, or nearly so.

In all these experiments the line was sharply drawn between success and failure. No development occurred and the bouillon remained transparent in those experiments in which the germicidal action was complete, and a characteristic development occurred within twenty-four hours in those experiments in which there was a failure to destroy the spirillum.

Benzo-naphthol has no germicidal power, probably because it is insoluble in water. At least this is my inference from the experiments made. One gramme was added to 1000 c.c. of distilled water, and after vigorous shaking was placed in the steam sterilizer for half an hour. At the end of this time the greater portion, at least, of the benzo-naphthol remained undissolved at the bottom of the flask. The saturated solution (?) was then filtered and added to recent bouillon cultures of the cholera spirillum in the proportion of 1:1, 1:2, 1:4, and 2:1. At the end of two hours sterile bouillon in test-tubes was inoculated from each of these and placed in the incubating oven. At the end of forty-eight hours a characteristic development of the cholera spirillum had occurred in all of the tubes. Very truly yours,

GEORGE M. STERNBERG.

These results must be considered of the greatest importance in view of the fact that we have in cholera, at first, a local intestinal ailment of which many cases might be readily arrested at the onset, could easy, thorough disinfection of the affected part of the bowel be practised. Beta- and alpha-naphthol apparently fulfil all the desired indications. They may, indeed, in this instance, be termed ideal intestinal germicides, neither decomposable nor more than slightly soluble and absorbable, and harmless in doses apparently incomparably more than efficient, both as antiseptic and disinfectant. As one part of either naphthol to sixteen thousand parts of culture medium is sufficient to prevent development of the spirillum, and one part to two thousand is here an efficient bactericide, and as one to sixteen thousand equals but a half-grain to the pint, it would follow that but five grains of naphthol, if in solution, would be required to render the entire small intestine antiseptic against the cholera spirillum, while about forty grains under similar conditions would be germicidal, since the contents of the small intestines, even when thoroughly distended throughout their length—a condition practically never existing—cannot amount to more than ten pints.

As stated elsewhere,¹ despite these calculations, it would be, of course, difficult to accurately formulate the exact dose necessary to create immunity against cholera or that efficient to exert a bactericidal effect in cases of the developed disease. Fortunately, purified preparations of

¹ Medical News, October 1, 1892.

beta- and alpha-naphthol are harmless in any dose possible to be ingested. Though the maximum medicinal dose of beta-naphthol ordinarily necessary is placed at one gramme (15 grains) or, daily, four grammes (one drachm), a much larger quantity than this, if necessary, may with safety be taken. Bouchardat's¹ investigations led him to place the toxic quantity at about 250 grammes (8 $\frac{1}{2}$ ounces avoirdupois) for a person weighing sixty-five kilograms (143 pounds avoirdupois) and Maximovitch considers 585 grammes (20 $\frac{5}{8}$ ounces avoirdupois) of pure alpha-naphthol needful for the same purpose,² so that alpha-naphthol is still less toxic than beta-naphthol, if the term poisonous can be properly used for remedies so harmless.³

As alpha-naphthol is of disagreeable taste and is said to be somewhat irritating to the mucous membranes in full doses,⁴ purified beta-naphthol is to be preferred. The dose of either beta- or alpha-naphthol, as a prophylactic against cholera during exposure, should be one sufficient to promptly antisepticize, to a maximum extent, the whole gastro-intestinal tract—about five to ten grains, three to four times daily, best taken *very finely pulverized*, perhaps with white sugar as the excipient. In early choleraic diarrhœa similar or larger doses may be taken, but at shorter intervals. If thought desirable, combinations may be made with opium or with calomel. In the event of decided gastric irritability preventing the ingestion of naphthol, a prompt and thorough trial of it by Cantani's method of enteroclysis,⁵ two, and, if possible, more litres of warmed saturated aqueous solution in a fountain syringe should be gently forced into the bowel by hydrostatic pressure, efforts being made to pass the ileo-cæcal valve⁶ and irrigate the lower ileum. Could this procedure be invariably successful in all cases of cholera—and Cantani holds that he has proved that it is possible, even with comparatively small amounts of fluid, to force the valve—it would appear that we probably have in naphthol enteroclysis an almost certain specific for the arrest of cholera, if the injections are resorted to sufficiently early. It

¹ A full account of Prof. Bouchardat's experiments on the antiseptic and physiological effects of beta-naphthol is contained in the *Pharmaceutische Rundschau*, Feb., 1888.

² See Merck's Bulletin, December, 1890, p. 148.

³ The above shows how misleading and ridiculously untrue is the statement, made for trade purposes by a certain drug manufacturing house, in a pamphlet devoted to the virtues of a proprietary preparation of their own, which is but an unpurified beta-naphthol, that beta-naphthol, even when used externally in the smallest dose, is highly poisonous, causing albuminuria, etc.

⁴ In the few cases in which I have recently used alpha-naphthol I have not observed this effect. I have had a delicate girl, aged twelve, with helminthiasis, under doses of gr. xv. to gr. xx. daily, for ten days, without the slightest indication of irritant action on stomach, bowels, or kidney.

⁵ See Berlin. klin. Wochenschr., September 12, 1892.

⁶ Some valuable experimental points as to the ability to force fluid through the valve of Bauhin and best technique to employ, are given by Hare, *Therapeutic Gazette*, October, 1892, p. 680, and *New York Med. Journ.*, October 29, 1892, p. 499.

would be essential that the naphthol solution be retained a short time, sufficient for a disinfectant effect to be exerted, which Sternberg's experiments show occurs with comparative promptness in 1:2000 parts.¹ With the saturated naphthol solution (about a gramme to the litre, or 1:1000), the ordinary ingredients of Cantani's injection may be employed, or, preferably, these minus tannin.² The opium and gum arabic should be valuable adjuvants. These will, in addition to other obvious advantages of the opium, tend to allay any bowel irritability which naphthol in full strength might occasion. They will probably permit of a saturated solution being used and a large quantity of fluid being introduced—at least two litres—to insure thorough distention of colon and passage of the ileo-cæcal valve.

Regarding benzo-naphthol, for internal use a very pleasant salt of beta-naphthol and benzoic acid, which was found by Dr. Sternberg to be without disinfectant or antiseptic effects on the cholera spirillum, it must be borne in mind that this, as also betol, or beta-naphthol salicylate, which is similarly without antiseptic power in its combined condition,³ is susceptible of dissociation into its components in the upper bowel. As a result, active nascent beta-naphthol is liberated. This fact would seem to establish these salts of naphthol, also, as potent remedies in cholera, were there not uncertainty as to the extent with which this decomposition normally occurs in the bowel and the influence of diseased conditions upon it. Should beta-naphthol itself succeed as a remedy in cholera, these salts should be tried, as the more pleasant of ingestion. Obviously nothing could be expected of them by the method of enteroclysis.

2620 NORTH FIFTH STREET, PHILADELPHIA.

THE INTERNAL TREATMENT OF LUPUS ERYTHEMATOSUS WITH PHOSPHORUS.⁴

By L. DUNCAN BULKLEY, A.M., M.D.,

PROFESSOR OF DERMATOLOGY AND SYPHILIS, NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; PHYSICIAN TO THE NEW YORK SKIN AND CANCER HOSPITAL, ETC.

LUPUS erythematosus is recognized as one of the most rebellious of the diseases of the skin, and any substantial addition to its therapeutics must be as welcome to others as it has been to the writer.

¹ Dr. Sternberg informs me he has no doubt, from his results with varying strengths, that a proportion 1:1000 will destroy the spirillum in five minutes or less. Trial of this strength was not attempted, the method employed rendering it troublesome.

² Tannic acid has simply an inhibitory but no germicidal effect on the spirillum, even in 1 per cent. solution. This same effect is produced by naphthol in the proportion 1:16,000.

³ See Therap. Monat., May, 1888.

⁴ Read before the Canadian Medical Association, September 21, 1892.

Having employed the treatment about to be recommended for about ten years, and in perhaps fifty cases, I take pleasure in calling attention to the same, feeling confident that, if rightly used, others will find the same excellent results which I have obtained in a considerable proportion of the cases.

Before detailing the method of treatment advocated I will very briefly present a table of the cases which have come under my observation in private practice, and in the clinics of the New York Hospital, the New York Skin and Cancer Hospital, and the clinic of the Post-Graduate Medical School. The records of the cases treated in earlier clinics are not now readily accessible, but would considerably increase the number of the cases.

The number of cases here collected amounts to 97, seen in a total of 20,798 cases of miscellaneous diseases of the skin; in the same number of general cases were seen 73 cases of lupus vulgaris, showing that in New York the affection under consideration is more common than true lupus, with which it is associated in name, without having any other relationship. I do not recall having ever seen the two associated in the same individual, or having seen the one transformed into the other; in specimens of lupus erythematosus which I have had examined by competent authority, the bacillus of lupus has never been found. In one very severe case of lupus erythematosus, which has been under my observation and care for many years, injections of tuberculin were tried faithfully for a long period, in the hands of a colleague, not only with no benefit, but with ultimate injury.

The following table presents the ages and sex of the cases referred to:

TABLE I.—LUPUS ERYTHEMATOSUS.

Ages of patients.	Private practice. 7573 cases.			Public practice. 13,225 cases.			Grand total.
	Male.	Female.	Total.	Male.	Female.	Total.	
1 to 10 years	0	0	0	0	0	0	0
10 " 20 "	1	2	3	1	5	6	9
20 " 30 "	4	11	15	3	18	21	36
30 " 40 "	3	7	10	6	4	10	20
40 " 50 "	3	7	10	2	7	9	19
50 " 60 "	0	7	7	2	1	3	10
Above 60 "	0	1	1	2	0	2	3
Total	11	35	46	16	35	51	97

It is here seen that lupus erythematosus is very much more common among females than among males, the former comprising over 72 per

cent. of the whole; that it did not occur once under the age of ten years; and that over one-third of the cases were observed between the ages of twenty and thirty years.

It may be interesting to present in connection with this the data relating to the cases of lupus vulgaris which occurred in the same number of miscellaneous skin cases, and which are exhibited in the following table:

TABLE II.—LUPUS VULGARIS.

Ages of patients.	Private practice. 7573 cases.			Public practice. 13,225 cases.			Grand total.
	Male.	Female.	Total.	Male.	Female.	Total.	
1 to 10 years	0	1	1	0	1	1	2
10 " 20 "	3	2	5	2	8	10	15
20 " 30 "	2	4	6	3	9	12	18
30 " 40 "	3	4	7	3	3	6	13
40 " 50 "	1	7	8	1	3	4	12
50 " 60 "	2	2	4	0	4	4	8
Over 60 "	1	2	3	2	0	2	5
Total	12	22	34	11	28	39	73

It is unnecessary here to enter at all into the subject of the nature of lupus erythematosus, of which we know so little, or to attempt any consideration of its clinical features, which have been so well presented by many writers, as well as its microscopic anatomy. The cases here analyzed represented various phases and degrees of the eruption, from a relatively small patch of recent origin, to a very extensive and severe eruption of many years' duration. It has never, however, fallen to my lot to see any of the cases of very acute, rapidly developing, multiple, discoid, erythematous lupus, terminating fatally, such as have been described, especially by Kaposi.

One of the most acute and severe cases which I have ever met with has recently been under my care, in a man aged forty-three, in whom within six months a large share of the face was covered with patches of the eruption, developing from small points; this case yielded well to the treatment to be described, with no local remedies, so that within two months there were but few traces of the eruption; although some small patches have still resisted for considerable length of time. In another very acute case, in a girl aged twenty, almost the entire face became covered in a very short time; and in this case, also, the disease was controlled almost at once in the same manner; in two or three months all the active process had disappeared, leaving only depressed and slightly reddened scars; the girl has remained as a servant in the Skin and Cancer Hos-

pital, and continues quite free from the eruption now, for nearly two years, though the face shows still the superficial scars left by the former lesions.

In a number of chronic cases, where the eruption had existed for a long period, even some years, the improvement was also almost as rapid under a free use of the phosphorus; so that, in the light of other experience, and in the sudden checking of the eruption and its rapid subsidence in these acute cases, and the increase of the eruption once or twice when the remedy was stopped, I am quite satisfied that the results were obtained from the treatment, and had not to do with the spontaneous improvement which we sometimes see occurring in this disease.

The longest period during which I have watched a case, is in that of a young woman now under treatment at the age of twenty-five years. She first came under my care some thirteen years ago, when about twelve years of age; the eruption had then been of about two years' duration and affected the nose, ears, and fingers. The disease continued and increased under various forms of treatment, until the phosphorus was used, about ten years ago, when it yielded, and within some months there were only scars left. She then ceased treatment for a while and there was some relapse, which again disappeared under the same treatment. After this she remained well for a number of years, until, being married at nineteen years of age, the eruption reappeared after the birth of her first child, within a year after marriage. She then fell into other hands and received a variety of treatment with a constant increase of the eruption up to the time when she again came under my care some months since; this was the patient already referred to as having received the treatment with tuberculin.

When I again took charge of her there was a very large amount of eruption on the face, ears, and scalp, with many scars left by former lesions and the severe local measures which had been adopted. There were both chronic patches and those of more acute, somewhat inflammatory character, attended with considerable heat and burning. During the past few months she has been under full doses of the phosphorus, with again happy effects. There has been almost immediate cessation of all acute symptoms, and many of the lesions have almost disappeared, there having been no local applications made. Many of the older lesions have also shrunken, and some have completely cicatrized. I have repeatedly shown and lectured upon this patient, and the marked and steady improvement has been strongly commented upon by the physicians attending the Post-Graduate Medical School.

It is not wise to attempt to present data or statistics in regard to the cure of such an eruption by any special line of treatment; we all know how unreliable such statements may be in a special and consultation practice, and I will not attempt it on the present occasion. I may state,

however, that in a very considerable number of cases I have seen the lesions of lupus erythematosus subside and entirely disappear under the treatment proposed, and in a number of instances I have had the patients under observation, in one way or another, for a length of time after treatment.

In reference now to the particular plan of treatment recommended, I wish first to state, that I do not by any means claim priority in the use of phosphorus in lupus erythematosus, for I believe it has been mentioned in some of the older books, and I do not know where I first found the suggestion which led to its employment.

But I have searched in vain in the more recent works for any mention of its use, nor can I recall any suggestions of the same in journal literature, except such as I have myself occasionally thrown out from time to time; these latter, however, do not appear to have attracted attention—indeed, this treatment was mentioned only casually in connection with other subjects. In the light of my experience, therefore, I wish now to bring forward this remedy as a most valuable addition to our internal treatment of this disease, for the therapeutics of lupus erythematosus is certainly far from satisfactory, as may be judged from the meagre presentation of the subject in our recent text-books.

Some considerable care is necessary in employing phosphorus internally, but if it is properly administered and due precautions are exercised, I believe it to be perfectly safe; some of my patients have taken it continuously for months, not only without harm, but in some instances with marked improvement to their general health.

While it is the phosphorus that is of service in the disease under consideration, there is great difference, both in regard to its immediate and later effects, as to the form and method in which it is administered. In my earlier trials with the remedy, I gave it, as is often recommended, in oily solutions, and in the form of pills; but with these I had on several occasions such severe digestive and liver disturbances, and occasionally with violent jaundice, that I was led to adopt wholly the form of administration about to be recommended, and to exercise other precautions, so that now for a number of years past I have had no single instance of disturbance from the remedy which could cause uneasiness.

The form in which I now administer the phosphorus is in a solution, which was first suggested, I believe, by Dr. Ashburton Thompson, primarily for employment in nervous conditions. I give here the formula which I have long used, and which is known in my clinics as "Thompson's solution of phosphorus":

R.—Phosphorus	gr. vj.
Absolute alcohol	3xxx.

To be dissolved with the aid of heat and agitation, and then mixed, while still warm, with the following mixture, also warmed :

Glycerin	.	.	.	.	.	.	.	.	℥i ^{ss} .
Alcohol	.	.	.	.	.	.	.	.	℥j ^{ss} .
Essence peppermint	.	.	.	.	.	.	.	.	℥ss.

Each drachm contains $\frac{1}{10}$ grain of phosphorus.

In most cases I begin with fifteen drops, in water, three times daily after meals. It is well to have the water added quickly after the liquid has been dropped out in an empty glass, and the dose should be taken at once, as I believe that the presence of water changes somewhat the state of the free phosphorus: if exposed to the air the phosphorus oxidizes, and the less efficient phosphoric acid is formed. Commonly the dose may be increased by one or two drops daily until thirty are taken three times daily; the dose is then increased more slowly, by one drop every other day, until forty or forty-five are taken each time, and in rare cases, if it agrees, even a larger amount may be given; but seldom have I given as much as sixty drops to a dose. As the disease yields, the dosage is still continued, if well borne, even until the lesions have quite disappeared and superficial cicatrization has taken place.

It is well to watch patients very carefully while taking this remedy, noting the condition of the tongue and of the digestion, and with the least disturbance the drops should be stopped for the time, and proper measures instituted to restore the deranged functions. If there is any constipation or signs of liver disturbance, I always give a mild dose of blue-mass, colocynth, and ipecac, repeated on the second night after; if, then, the bowel discharge has been free and the tongue is not coated, the drops may be resumed at a smaller dose than when stopped, and the amount again increased, yet more slowly and cautiously.

In many instances the greatest benefit will result from the administration of full doses of nitric acid after each meal, well diluted, in the interval of cessation of the drops, say for a week, when they may be returned to as before. This course of nitric acid may be repeated from time to time with advantage.

When there is much heat and flushing in the eruption, it will often be better to give, in place of the nitric acid, the acetate of potassa, in doses of fifteen grains, with the fluid extract of rumex, and nux vomica, well diluted, half an hour before meals, as in acne rosacea. This I have sometimes seen to have a most beneficial effect upon the eruption, and when the phosphorus has seemed to have lost its effect on the lesions, I have observed it to take hold of them strongly after a course of a week or so of the acetate and rumex mixture.

In many instances, however, there has been little or no difficulty in taking the phosphorus when the dose was not pushed too actively, and

some patients have required little or no assistance from the measures mentioned. But I must insist that the remedy here advocated is to be given most carefully, and claim that, when rightly administered, it is harmless and of great benefit to the disease in question.

Knowing so little as we do in regard to the real nature and causation of lupus erythematosus, I cannot attempt any definite explanation of the mode of action of the remedy in this disease. But in my judgment, arguing from the effects of phosphorus in certain nervous conditions, I think we must look for its action through the agency of the nervous system. There are many elements, which I cannot consider now, which point to a probability that the eruption is of angio-neurotic origin, and these are confirmed, in a measure, by the results obtained from phosphorus employed in the method above described.

I have not attempted any consideration of the local treatment of lupus erythematosus, as I wished to present only the single point which has been emphasized in this paper. In many of my cases I have found decided results from the methods commonly described; but their frequent failure to check the spread of the disease has led me to persist in the use of the internal remedy here advocated, which will, I trust, meet with favor also in the hands of my *confrères*.

SYMPHYSIOTOMY; WITH THE REPORT OF A SUCCESSFUL CASE.

BY HENRY J. GARRIGUES, A.M., M.D.,

PROFESSOR OF OBSTETRICS IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL;
CONSULTING OBSTETRIC SURGEON TO THE NEW YORK MATERNITY HOSPITAL;
CONSULTING OBSTETRICIAN TO THE NEW YORK INFANT ASYLUM;
GYNECOLOGIST TO ST. MARK'S HOSPITAL, ETC.

(Concluded from page 298.)

IN some animals, such as the hedgehog, the mouse, the rabbit, the guinea-pig, and the cow, the symphysis separates normally to a considerable extent during parturition. In women we can infer that occasionally the same takes place when, after an otherwise normal labor, with a large child, we see a looseness of the symphysis occur which disappears in the course of some weeks or months.

DISTANCE BETWEEN ENDS OF PUBIC BONES.—Experiments on the cadaver in regard to the possible separation of the pubic bones are not conclusive unless they are performed on women at or near term or short time after delivery, for during pregnancy the ligaments that form the hinges between the pelvic bones become much more mobile than before or later. There is now so large a number of such experiments on record, and the distance has been accurately measured during

delivery after symphysiotomy in so many operations, that this point may be looked upon as definitely settled. If the knee- and hip-joints are kept bent, as they ought to be, and the symphysis is cut, the ends of the bones separate spontaneously 3-4 cm. ($1\frac{1}{4}$ - $1\frac{1}{2}$ in.). This is due to the elasticity of the sacro-iliac joints; the contraction of the muscles surrounding the pelvis, especially the gluteus maximus; and the weight of the pelvis in front of the sacro-iliac joint and of the lower extremity. By pulling on the iliac bones or pressing the knees outward, this distance can easily be increased to 7 cm. ($2\frac{3}{4}$ in.); and the same distance has been measured during extraction with forceps, without any injury to the sacro-iliac joints. If the separation is carried to 8, 9, or 10 cm. ($3\frac{1}{8}$ -4 in.), one or both joints crack and open.

When the pubic bones separate, the antero-posterior diameter of the pelvis ceases to exist. The gap in front allows the eminence of the anterior parietal bone to enter, which has the same effect as if the diameter became 6-8 mm. ($\frac{1}{4}$ - $\frac{3}{8}$ in.) longer. Besides, the distance from the promontory to the end of the pubic bone increases, the greater the distance becomes between the ends of the bones. It has been found that the increase is about 2 mm. for each centimetre distance between the pubic bones. The maximum safe distance of 7 cm. ($2\frac{3}{4}$ in.) gives, consequently, an elongation of 14 mm. (over $\frac{1}{2}$ inch).

The transverse and oblique diameter, and every line drawn from the centre of the promontory to a point on the anterior half of the ilio-pectineal line, increases from one-quarter to one-half of the distance between the ends of the pubic bones—*i. e.*, at the safe maximum distance of 7 cm., the increase will be 17-35 mm. ($\frac{3}{4}$ - $1\frac{1}{2}$ in.). Farabeuf has published figures showing that a pelvis which, before the cutting, only admitted a circle of 6 cm., after the separation admits one of 8.4 cm.; and one which before the operation only admitted a circle of 8 cm., admits after the operation one of 9.8 cm.

Zweifel examined the sacro-iliac joints after symphysiotomy in a case with a diagonal conjugate of 10 cm. (4 in.), external conjugate 17 cm. ($6\frac{3}{4}$ in.), normal lateral measures, and a distance of 6.5 cm. ($2\frac{1}{2}$ in.) during traction, and found them very mobile, but in close contact.

Sometimes the joints have even stood a greater interpubic separation than 7 cm., as in a case of Caruso, with external conjugate 17.5 cm. ($6\frac{7}{8}$ in.), diagonal conjugate 8.5 cm. ($3\frac{1}{4}$ in.), estimated true conjugate 7 cm. ($2\frac{3}{4}$ in.); child 3000 grammes ($6\frac{1}{16}$ lbs.). In this case, which was entirely successful, the distance was 8.5-9 cm. ($3\frac{1}{4}$ - $3\frac{1}{2}$ in.) during the passage of the head by manual extraction in knee presentation.

Pinard has three times seen a tear in the vestibule and the vagina, which in one case, at least, communicated with the wound, but they healed easily without suture.

Even in a man there has been obtained a distance between the ends of the pubic bones of 42 mm. ($1\frac{5}{8}$ in.).¹

INDICATIONS AND LIMITS.—Symphysiotomy is indicated in the flat pelvis with a true conjugate ranging between 67 and 88 mm. ($2\frac{5}{8}$ – $3\frac{1}{2}$ in.), but it is difficult below 70 mm. ($2\frac{3}{4}$ in.).

On the other hand, normal birth, forceps, or version is possible down to a true conjugate of $2\frac{3}{4}$ in. (7 cm.), if the child is small and the head is easily moulded; but both forceps and version give, in general, disastrous results with a conjugate below $3\frac{1}{4}$ in. (8.5 cm.).

There is a great mortality for both mother and child, and if the child survive, there is danger of its being idiotic. *The safe and proper field for symphysiotomy with flat pelvis lies, therefore, between $2\frac{3}{4}$ and $3\frac{1}{2}$ inches.*

Theoretically the lower limit is found by considering that the distance between the centre of the promontory and the end of the pubic bone is elongated 14 mm.; that the head enters between the bones to a distance of 6–8 mm. which together makes 20–22 mm. ($\frac{3}{4}$ – $\frac{7}{8}$ in.); that the biparietal diameter of the foetal head is 95 mm. ($3\frac{3}{4}$ in.), which may be reduced to 88 mm. ($3\frac{1}{2}$ in.), and that, consequently, by subtracting 21 from 88 and 95, the operation is difficult at 67 mm. ($2\frac{3}{4}$ in.), easy at 47 mm. (3 in.).

In the generally contracted pelvis I think it would even be proper to place the upper limit at 10 cm. (4 in.) c. v.

Lepage has performed the operation in the case of a tumor partly obliterating the cavity of the pelvis. This is proper with an exostosis or a pedunculated fibroid that cannot be pushed out of the way. With an ovarian cyst tapping is preferable.

Jewett operated on a patient in whom all else was obviously ample, but whose outlet was narrowed from side to side, the bisischial distance measuring about 3 inches.

Michael² proposes, as it would seem on good grounds, to perform the operation in mento-posterior face presentations, in which the chin cannot be rotated forward.

EXAMINATION OF PELVIS.—It appears from the above, that the first condition for a rational decision as to the propriety of performing symphysiotomy is the accurate measurement of the pelvis. In Maternity Hospital the three outer measures, the distance between the anterior superior spines, between the crests, and between the depression between the sacrum and the spinous process of the fifth lumbar vertebra on one side and the upper end of the symphysis pubis on the other, are taken in every case. This would hardly be allowed in private practice, but as soon as a tedious opening of the os or any other circumstance makes it

¹ Albarran: Med. Weekly, January 20, 1893.

² J. Edwin Michael, of Baltimore, Md., Journ. Obst., Feb., 1893, vol. xxvii. p. 188.

probable that there is a disproportion between the presenting part and the superior strait, such an examination ought to be made and followed by internal pelvimetry with the hand. It is not difficult to do this; the necessary instrument is portable and inexpensive, and ought to be found in the satchel of every obstetrician.

If we find a diagonal conjugate of 80-92 mm. ($3\frac{1}{4}$ - $3\frac{3}{4}$ in.) the probability is that symphysiotomy may be called for.

FIG. 6.



Cadaver of a woman at the end of pregnancy, the abdomen opened with a crucial incision. (William Hunter's *Gravid Uterus*, republished by the Sydenham Society, London, 1851, Plate I.)

The reduction of the diagonal conjugate, which we can measure directly, to the true conjugate is a rather delicate computation. How much is to be deducted from the first, in order to find the latter, depends on three factors: the height of the pubis, the inclination of the pubis, and the elevation of the promontory. The height of the pubis can be measured directly with the finger in the vagina; the two other points can only be estimated according to inspection and palpation. Spiegelberg found by actual measurement in autopsies on puerperæ, that the amount to be deducted varied from 1 to 3 cm. ($\frac{1}{2}$ to $1\frac{1}{4}$ in.). He gives

the practical rule to deduct 1.5 cm. ($\frac{5}{8}$ in.) when the symphysis is 4 cm. ($1\frac{5}{8}$ in.) or less, and to deduct 2 cm. ($\frac{3}{4}$ in.) when the symphysis is more than 4 cm. high. Mangiagalli has found, by exact measurement of a hundred pelves, that one is least exposed to commit an error by subtracting not less than 12 mm. ($\frac{1}{2}$ in.) nor more than 15 mm. ($\frac{5}{8}$ in.).

After having measured the pelvis the mobility of the sacro-iliac articulations must be tried by alternately extending and flexing the extremity and abducting the bent knee. The gait of the patient and her history may also give valuable information on this point.

FIG. 7.



Same body as in Fig. 6, after the removal of the ossa pubis and the muscles and integuments that cover them. The upper part of the labia majora and minora and the extremity of the clitoris are cut off. At either side of the root of the clitoris are seen the crus and erector clitoridis. These lie more horizontally than in the natural state, the ossa pubis, etc., which suspend them, being removed, and they are stretched, from the bones of the pelvis being drawn a little asunder. Above the clitoris appears the upper part of the bladder, which was compressed between the womb containing the child's head and the united ossa pubis.

If the cervix is not dilated or dilatable, Barnes' bags should be used. If the waters are broken and the head presents, moderate traction should be made with the forceps before performing symphysiotomy.

Fig 6 shows the thick layer of adipose tissue under the skin, above the symphysis.

Fig 7 is very instructive in regard to the whole field of operation as it appeared in my case with the long incision. Among other things, we notice the edge of the peritoneum where it ascends from the bladder

to the abdominal muscles. The distance from this line to the root of the clitoris measures 55 mm. ($2\frac{1}{4}$ in.)

This time symphysiotomy has come to stay. All pleading in its favor is superfluous. But many details in the operation must be discussed before we can arrive at the best *modus operandi*, which probably may have to be different in different cases.

MODUS OPERANDI.—Three assistants are required, one of whom gives the anæsthetic, the other two stand each on one side of the patient holding the knees and assisting at the wound.

Morisani operates with the patient placed across the bed. This is only possible with his very simple method of operating. For those who favor the long incision, and in view of the fact that nobody can know beforehand how much hemorrhage there will be and what other complications may arise, the removal to a table, as in all other serious operations, is necessary or desirable.

The operator sits on a chair, between the legs of the patient. During the first incision the legs may hang down over the end of the table or lie stretched out on the table, but during the incision of the symphysis the legs should be held bent in hip- and in knee-joint, moderately separated and with the feet high; and as this position is just as good for the incision of the skin and subcutaneous tissue, it is simpler to place the patient in this position at the beginning. Some have used leg-holders; on obstetrical grounds it seems, however, preferable to have them held by assistants so as to be able to have the angle between thigh and pelvis changed according to the requirements of the case.

Considerable interest attaches to the question about the place and the length of the first incision. It may be short, medium, or long; it may be below, above, or in front of the symphysis.

In 1833 Imbert, of Lyons, recommended to introduce a probe-pointed bistoury from the vestibule, on the flat, push it up behind the symphysis, turn the edge against the symphysis and cut through the latter from behind forward, avoiding to cut the skin.

In 1841 Carbonai, of Florence, made a small transverse incision sixteen lines above the symphysis, introduced a bistoury from above downward and cut from behind forward.

Morisani makes a longitudinal incision 3 cm. ($1\frac{1}{4}$ in.) long in the median line, ending 1 or 2 cm. ($\frac{1}{2}$ – $\frac{3}{4}$ in.) above the symphysis. Hirst followed exactly Morisani's description. Jewett carried an incision of the same length down to the upper end of the symphysis.

Porak made an incision 5–6 cm. (2 – $2\frac{1}{4}$ in.), and laid the whole symphysis bare.

The small incision of Morisani, placed far away from the exit for the lochial discharge, has great advantage for protecting the wound against

infection, but if there came a hemorrhage, as in my case and those of several other operators, it could not be attended to.

Most of the latest operators (Pinard, Leopold, Zweifel, Caruso, and myself) have made the incision 8 to 10 cm. (3 to 4 inches) long, beginning at the upper end of, or somewhat above the symphysis, and ending at the root of the clitoris or deviating to the left of the same.

This large incision extending down into the vulva has the drawback that the wound cannot be dressed strictly antiseptically, but it offers the immense advantage that the operator can see all he does, and can check hemorrhage in the most effective way. On the other hand, Morisani will probably be less exposed to hemorrhage.

Morisani recommends to cut sideways into the recti muscles, deep enough to make room for the index finger. This has been followed by several of the new operators (Caruso, Leopold, Zweifel, Hirst). Porak "detached the triangular ligament from its median insertions," which probably amounts to the same.

In my opinion this transverse incision is not necessary, and weakens the abdominal wall. If anything is wanted behind the symphysis, Hay's director (Fig. 2, *a*, p. 292) has a curvature that just fits to the posterior surface of the symphysis. Its median groove will serve as a guide for the bistoury, and its width will protect the bladder effectively. Törngren's plan of guiding the instruments with a finger in the vagina would seem to be a good one. Truzzi advises, in order to protect the bladder, to tampon with gauze wrung out of creolin emulsion, before cutting the symphysis.

It has been said by the older opponents of the operation that the symphysis may have such an abnormal position that it cannot be found, and several times "a piece of the os pubis has been sliced off." How operators have done this, unless they used a saw, I cannot understand, and even if the separation was made in the bone instead of the cartilage, that need not produce caries with our modern wound treatment. But I cannot see under what circumstances the symphysis could be missed, if the operator bears in mind that it has a distinct notch both at the upper and particularly at the lower end.

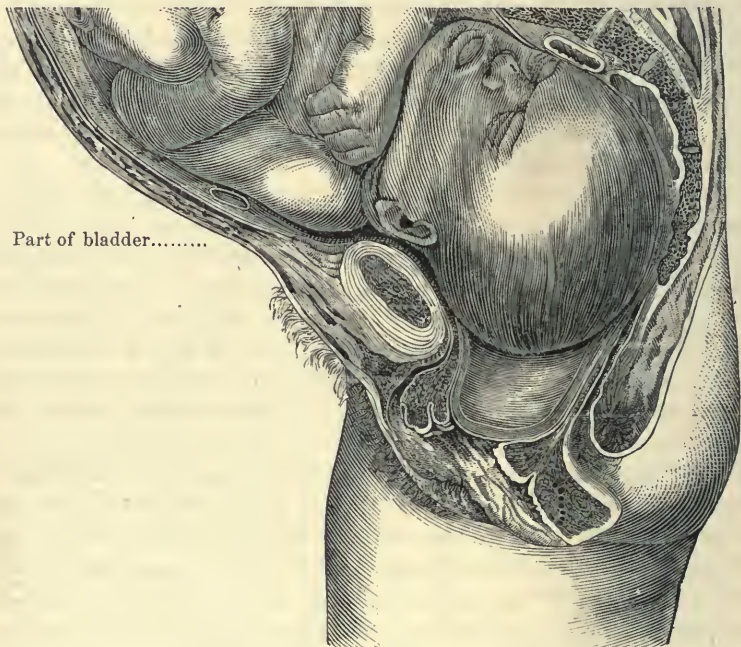
The clitoris is inserted midway between the upper and lower end, and the meatus urinarius is situated just below the lower end.

After having made his longitudinal and transverse incisions, and introduced the finger down to the lower end of the symphysis, Morisani introduces *Galbati's falcetta* (Fig. 2, *c*), and cuts from behind forward and from below upward. To cut from behind has the advantage that we go away from the bladder; but suppose the head is more or less engaged in the pelvis, then the bladder may be so squeezed between the symphysis and the head, that it is impossible to find room for finger and falcetta (Fig. 8). In such a case we would, of course, try to have the

child lifted, which even may be necessary, when the head is above the brim, as appears from Fig. 9, where the uterus forms a pouch descending in front of the symphysis.

But if it cannot be moved, it would be safer to cut from the front backwards, using great care when we got through the cartilage, and in severing the ligaments forming the symphysis behind. We have also seen in the beginning of this paper that the symphysis is much broader in front than behind, so that it sometimes only can be cut from the front.

FIG. 8.



Part of Braune's Plate C. Longitudinal cut through the middle line of the frozen body of a woman who died in the second stage of labor.

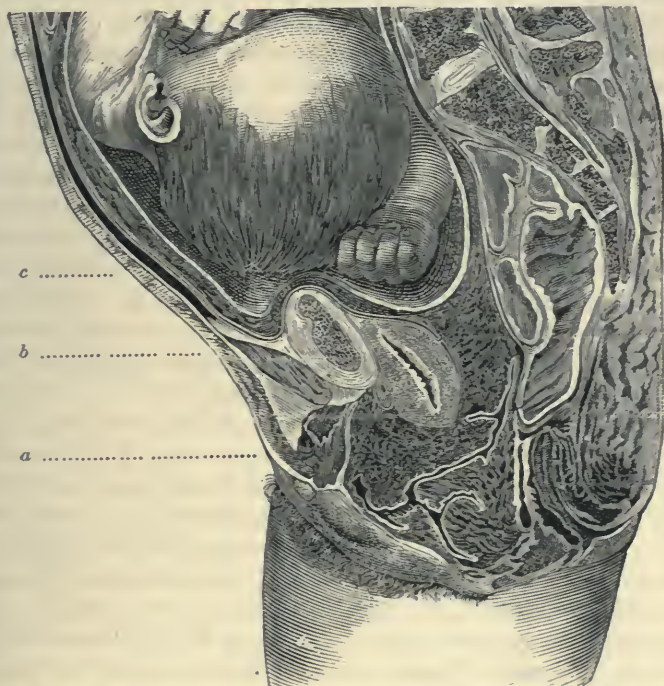
Morisani states likewise that he more than once has used a short probe-pointed bistoury, and cut the joint from the front backward.

To cut from below upward can hardly have any advantage. The urethra is easily held aside, and since the only serious hemorrhage that has ever occurred has always been at the lower end, it is best to leave this part of the incision to the last.

Leopold advises, in order to avoid hemorrhage, not to cut the subpubic ligament, and says that it is not even necessary to cut the whole symphysis, as a cut through the upper half, or three-fourths, allows the bones to separate 3 cm. (1½ inches). He says, also, that in his second case

he did not cut the ligament, but since he had a separation measuring 6.5 cm. ($2\frac{1}{2}$ inches), it is certain that it must have been severed, whether he cut it or tore it. Zweifel had to cut all, since severance of the upper half of the symphysis only gave a separation of 1 cm. ($\frac{1}{2}$ inch) between the ends of the bones, and Freund found the same after cutting the whole symphysis down to the ligament. Von Velits cut the upper three-fourths, and Törngren the whole symphysis, saving the ligament, but in both

FIG. 9.



Longitudinal cut through the middle line of the frozen cadaver of a woman at term. (Braune, Pl. B.) The cut having fallen a little to the right, the cervical canal, the urethra, and part of the bladder are not visible, but we see so much the better the spongy tissue forming the crus clitoridis (*a*). A large vein lies in the fat at the lower end of the symphysis (*b*), and another is seen in front of it. The uterus is relaxed, and forms a pouch (*c*) filled with liquor amnii in front of the symphysis.

cases all tore. Farabeuf cut the symphysis of a pelvis that had been for several months in the dissecting-room, through the upper three-fourths, and found the remaining fourth and the subpubic ligament strong enough to support a weight of thirty kilogrammes. It may, therefore, be taken for settled that the *whole symphysis, inclusive of the subpubic ligament, shall be cut.*

According to Morisani, the instrument used for this incision is the

falcetta (Fig. 2, *c*), and Hirst, who first thought that a common probe-pointed curved bistoury would serve his purpose, quickly laid it aside and was glad to avail himself of Galbiati's knife. This sickle-shaped instrument is introduced alongside of the left index finger, which is held against the posterior surface of the symphysis, down to the pubic arch. When the point has passed this, the handle is gradually pulled upward and forward.

The figure represents the knife in its original condition. Since the introduction of strict antisepsis it is made of one piece of steel, without any furrows, and hollowed out on the side of the handle.

I did not find any difficulty whatever in using such an ordinary bistoury, and, as will be seen in Fig. 2, it was a very small instrument compared with Galbiati's. Jewett succeeded, likewise, with "a strong probe-pointed bistoury." For those who make Morisani's incision, I think the falcetta will prove the best instrument in most cases, but for those who prefer the long incision it is superfluous. A concave probe-pointed bistoury, for cutting from behind, and a convex scalpel, for cases in which the cut must be made from the front backward, are all the knives needed for cutting the symphysis. We have above seen that under some circumstances this may even be done in order not to wound the bladder. It would also be indicated when the symphysis forms a zigzag line, as in the pelvis represented in Fig. 1.

Siebold found a synostosis, instead of a synchondrosis, and Velpeau has found the same twice. For this eventuality it is necessary to provide a chain-saw. Stolz recommended, even, always to saw the bone a little to one side of the cartilage. He introduced the saw by attaching it to a slightly curved needle, which he introduced through a small transverse opening on the mons Veneris, and pushed out between the crus of the clitoris and the descending ramus of the pubes. It would perhaps be better, in cases where bone has to be cut, to use chisel and mallet, as Albarran did, and as is used by other surgeons in operations on the joints. McKennan, of Paris, Ill., could not cut the symphysis with a strong probe-pointed bistoury, but severed it by means of a narrow probe-pointed metacarpal saw.

The urethra is protected against injury by being held over to the right side by means of a long metal catheter, which at the same time serves to keep the bladder empty.

The bladder and the vagina are guarded by the finger held behind the symphysis, or by passing a director. In some cases there will, as stated above, not be room for either. The bladder in the case represented in Fig. 8 was so compressed between the symphysis and the head that the tissue could hardly be seen in the cadaver. I think the bladder might also occasionally be caught between the ends of the pubic bones, when they are brought together at the end of the operation.

This viscus contracts in two different ways. Either the fundus falls down on the base so that, together with the urethra, it forms a Y, or the posterior wall is pressed against the anterior, as in Fig. 9, so that the canal is more like a C. In the latter event it rises, of course, higher up. During parturition it is even in part pushed and drawn up above the top of the pubis, as seen in Fig. 8. It is therefore clear that in certain symphysiotomies it must be in great danger of being wounded, and I cannot agree with Caruso, who lays the blame for such an accident, as well as for an abnormal puerperium following the operation, on the operator.

The vagina may also be wounded or caught between the bones, but even if a vesico-vaginal fistula should occur, the evil is not great. Several times it has healed spontaneously, and in one case Morisani closed it by a subsequent operation.

The sacro-iliac joints must also be borne in mind. Müllerheim advises to surround the pelvis with a thick rubber tube immediately after cutting the cartilage. Zweifel tried it, but found that it slipped up. It is better to have the assistants press moderately on the trochanters, and in this way prevent too great a strain on these articulations. The soft parts should be held apart during extraction, and the distance between the ends of the pubic bones measured exactly. It is also in the interest of these joints to leave the birth of the child to Nature after cutting the symphysis, but we shall presently see that there are serious objections to this plan.

If it is necessary to guard against injury to the sacro-iliac joints of the mother, it is, on the other hand, often necessary, in order to make room for the child, to lessen the pressure on the trochanters, or even to *press on the bent knees or pull on the ilium*. When we see how often the child has been delivered in an asphyctic condition, and take the cases into consideration in which it died, this side of the operation does not seem hitherto to have received the attention it deserves. Pinard has lost two children from fracture of the skull; the first delivered by manual extraction of the aftercoming head, the second by forceps applied to the presenting head. The ends of the bones should be held apart at least $1\frac{1}{2}$ inches (4 cm.), and more if delivery meets with difficulty. We know that a distance of $2\frac{1}{2}$ inches (7 cm.) is perfectly safe, and that we may even succeed with a greater separation. To use the child as dilator increases its danger very much, without corresponding advantage to the mother.

Pinard has constructed a special "écarteur régistreur," an instrument which he inserts between the pubic bones, and on which he can read the distance between them.

When the symphysis has been separated the wound should be stuffed

with gauze, impregnated with some antiseptic substance. Creolin ought, perhaps, to be preferred on account of its hæmostatic properties.

A point of great importance to settle is the question in what way, if any, labor shall be furthered beyond cutting the symphysis. Morisani leaves the case to Nature if the pains are good, and looks upon this as one of the reasons why modern operations have been more successful than the old. But in about one case out of four, traction with *forceps* has been found necessary to complete delivery. In my case there were no labor pains at all, so that some intervention was necessary. Perhaps, sometimes, the waters may be broken and the head pushed down from above, and then seized by forceps or shelled out by pressure through the rectum (Freund, Jewett). Our child was in a precarious condition, as shown by the meconium in the liquor amnii, before any mode of delivery was attempted, and it is doubtful whether a high forceps operation could have been performed more expeditiously than turning, and would have saved its life.

The fact that several operators have met with considerable hemorrhage makes me think it safer to deliver. It is also an advantage to do so while the patient is anæsthetized. But the opinion of a man with Morisani's experience must, of course, as yet have much weight.

Morisani does not mention *version* at all. I think, if we decide to deliver artificially, the common rules ought to be followed: forceps for engaged head, turning for head movable above brim. In Harris's last list of forty-four cases version was performed four times with presenting head, saving all mothers, and all children born alive (in one of induced labor it died on the third day).

Under rare circumstances, even other operations may become necessary now, just as they did in former years, such as embryotomy of the dead child, or even Cæsarean section in case it is living and cannot be delivered *per vias naturales*.

It is quite remarkable how often the child is born *asphyctic*. Everything needed for its revival should, therefore, be prepared beforehand.

Müllerheim (Freund's assistant) is the only one who mentions "rather considerable *hemorrhage*" from the incision of the soft parts, but several operators (Leopold, Zweifel, Törngren, Porak, beside myself) have met with more or less serious bleeding at the lower end of the symphysis. Dr. Stewart has told me he found in a dissection, made shortly after my operation, a large vein running just behind the symphysis, and we know that the dorsal vein of the clitoris goes below the subpubic ligament, and is connected with the obturator vein of the same side by a considerable branch, which ascends on the back of the pubis toward the thyroid foramen.¹ At the lower end, both behind and in front of the symphysis,

¹ Quain's Anatomy, 9th ed., 1882, vol. i. pp. 523, 524.

there is a spongy tissue full of veins, some of which can be seen in Fig. 9.

That this hemorrhage ought not to be left unheeded appears from Freund's case, in which a large hæmatoma formed in the right labium majus, suppurated, and opened into the vagina behind the right pubic bone. In my case three arteries had to be tied. Törngren checked his bleeding by deep sutures through all tissue in front of the symphysis, and an iodoform gauze tampon in the vagina. Zweifel found pressure-forceps and ligatures insufficient, and had to carry a ligature with needle deep into the tissue, guiding the needle from the vagina. This had to be done on both sides. He thinks the bleeding came from the corpora cavernosa of the clitoris being torn apart. Leopold ascribes likewise his hemorrhage to the corpus cavernosum.

In my case the placenta followed the extraction of the child immediately. If it did not come soon, say within a quarter of an hour or twenty minutes, it would be better to loosen it artificially before closing the wound.

After the birth of the child and the removal of the placenta, the bones should be brought together by pressing on the trochanters. Leopold inserted three silk sutures through the cartilage. Zweifel used four threads of silkworm-gut with a needle at both ends. I put them only through the fibrous tissue covering the bone in front; but I think this whole use of buried sutures is superfluous. All that is needed is to carry the deep sutures through the skin, adipose and fibrous tissue down to the bone, and take in about $\frac{1}{4}$ to $\frac{1}{2}$ inch of the latter on either side. When all are in place, the trochanters are pressed together, *taking particular care to ascertain that the bladder and the vagina do not get in between the ends of the bones*, and all the sutures are drawn tight and closed from above downward. One or more superficial sutures may be needed for a perfect adaptation of the edges. Silk answers every purpose. Silkworm-gut is rather short; silver wire causes more pain in being removed.

The whole wound is closed without providing for any drainage, which can always be done later if there should arise suppuration in the depth of the wound.

Porak removed the sutures already on the sixth day; I partially on the sixth and partially on the ninth day; Pinard on the eighth; Von Velits on the fourteenth day, and Leopold on the seventeenth day.

The chief way in which the bones are kept together is by means of pressure on the trochanters. Pinard has gone so far as to construct a special bed for this purpose with hollow cushions fitting the trochanters! or places the patient in Bonnet's gouttière. Freund and Törngren used Esmarch's tube. If elastic pressure is wanted, Martin's roller bandage of solid rubber would seem more appropriate. Jewett used a

firm muslin binder. Morisani recommends a bandage painted with water-glass; Pinard used plaster-of-Paris; Freund a starched bandage lined with cotton. Many (Zweifel, Von Velits, Leopold, Morisani) have used a strap with buckles. The best of all, I think, is our excellent rubber adhesive plaster as used by Hirst, Michael, and myself. It insures absolute contact, is waterproof, and preserves the patient from pain in being moved. While my patient did not suffer at all, in several histories (Zweifel, Von Velits, Freund) we read of considerable pain necessitating a change of bandaging. Zweifel declares an apparatus for suspending the patient (Krankenschwebe) to be almost a necessity. In my case the patient had to be lifted on the bedpan every three hours, on account of the vaginal injections, but it did not hurt her.

In a case of Galbiati's there was a fibro-cartilaginous union four lines wide. Such accidents may have had something to do with the observations made in former years of women who had been symphysiotomized and later gave birth to children without the intervention of the obstetrical art. Even in one of the modern cases (Freund) a small cleft was left, but that did not prevent the patient from doing even the heaviest work.

The patient should lie with outstretched legs, not bent over a roll, as this straight position in itself brings the ends of the pubic bones together, and the knees should be prevented from separating so much that it has any influence on the symphysis.

We do not know how long cartilage takes to heal, and experiments on animals are therefore desirable, and have been promised by an assistant in one of the German clinics. Von Velits found on the twenty-first day an enormous callus which made the symphysis 5 cm. (2 inches) thick. In all other cases there seems, as in mine, to have been linear union without any appreciable enlargement, just as a cut heals by first intention in skin and muscles. Experiments by Redfern and others have shown that the cells in the cartilage multiply at the expense of the hyaline substance and form a cicatrix of connective tissue that slowly undergoes a retrograde metamorphosis.¹

This lack of an accurate pathological basis explains the great diversity in the time patients have been kept in bed. Porak says the symphysis was solid in his case on the seventh day; on the thirty-fifth day there was yet a greater mobility of this articulation than ordinarily, but she walked perfectly. Several patients in Harris's list were allowed to get up eight to ten days after the operation. On the other hand, Corradi says the bones unite in thirty to forty days, and Morisani gives two to four weeks as the limits. Pinard had a case of rupture of the symphysis with a diastasis of two fingerbreadths. Without the use of any

¹ Billroth: Allgemeine chirurgische Pathologie und Therapie, Berlin, 1866, p. 73.

kind of bandage the patient could walk in six weeks as well as before. Pinard and Porak kept their patients in bed until the twentieth day; Freund's got up on the twenty-first day, and could go up and down stairs on the twenty-ninth day; Von Velits's got up on the twenty-second and left the hospital on the twenty-sixth day; Leopold's left the bed on the twenty-fourth day and walked easily on the thirtieth. Novi keeps his patients in bed forty to fifty days.¹

In my own case there was found perfect union on the twentieth day, and it had perhaps already been there for some time. Leopold could move the legs of his patient on the seventeenth day without causing pain. At all events it seems to be safe to *let the patients get up by the end of three weeks, and they may, as a rule, be dismissed at the end of a month.*

If there are no complications there is no necessity for any special diet.

In Porak's case the urine contained a little pus and the patient suffered from incontinence for four days. In others the urine had to be drawn with catheter. My patient used the bedpan without any difficulty.

The bowels should be kept open as in any other puerperal case. Great attention must be paid to cleanliness, which may be difficult. We have seen that Pinard places the patient in a gouttière, a wire cuirass that allows of the patient being hoisted up and washed after defecation. The same can be obtained by a mechanical bed, lying on straps attached to a frame which is raised from the mattress by a crank, cog-wheels, and racks. Some turn the patient on the side from the very beginning, and loosen the strap around her pelvis; but this causes pain and is apt to interfere with healing. In this respect the broad straps of rubber adhesive plaster which I used proved very satisfactory. The patient was seized around the trochanters, lifted up, the bedpan was pushed in under her as often as required, the draw-sheet was changed every day and she was washed and wiped without causing any pain and without disturbing the contact of the severed bones.

PROGNOSIS.—If the operation is held within proper limits, and properly performed, and especially if the strictest antisepsis has been observed from the moment the patient was taken in labor, there is no danger for her life in the operation itself. Perfect union takes place between the bones. The patient's gait will be normal, and she will have the same strength as before. There is some danger of the bladder or the vagina, or both, being wounded, but this is a rare event. If a vesico-vaginal fistula forms, it will in most cases close spontaneously by mere cleanliness. If not, it can be closed by a second operation.

¹ Charpentier: Centralbl. f. Gynäk., January 14, 1893, p. 37.

For the child the danger is considerably greater, but yet small. The former great mortality was due to the performance of the operation in too narrow pelves, to the use of version, and to the too early extraction of the child, before the cervix was sufficiently dilated. By leaving the labor to Nature and by using forceps, a great reduction of mortality both for mother and child took place. But in Harris's last list we have yet five children lost, and many have evidently had a narrow escape. Sometimes, as in Jewett's case, the loss of the child has been due to delay before the operation, but in others (Pinard) the skull has been fractured, whether the child was extracted by forceps or by hand, and in reading the histories we very frequently find it reported that the child was born asphyctic.

RELATION TO OTHER OPERATIONS.—By the adoption of symphysiotomy a complete revision of the indications for other obstetric operations has become necessary. As to *craniotomy* on the living child, an operation which has already been denounced from many sides since the comparatively good results of the improved Cæsarean section, it will fortunately vanish altogether from our list of resources, since, with symphysiotomy at our command, it would be outright murder to kill the child in the uterus, except it be a hydrocephalus or a monster, and since the operation, even with very skilful treatment, is accompanied by a mortality of 5.6 per cent.¹

Induction of premature labor will be much restricted. The statistics of this operation, even with strict antisepsis, showing a maternal mortality of 5.3 per cent., and an infantile mortality of 45.3² per cent., what chance has it to survive in the struggle for existence with an operation that promises to entail hardly any loss of mothers and less than 10 per cent. among the children?

The *improved Cæsarean section* holds its own when the conjugate is below 2 $\frac{3}{4}$ inches (7 cm.), and other special circumstances, such as obstruction in the soft parts, obtain, but the many operations performed of late years, with a longer conjugate, ought not to be repeated, since even in the hands of a Leopold, and in the most favorable surroundings, this operation is accompanied by a mortality of 8 per cent. of the mothers,³ and since 135 consecutive cases by different operators gave a mortality of nearly 26 per cent. among the mothers, and over 8 per cent. among the children.⁴

In some cases of successful symphysiotomy the patient has been for days in labor (two days, Caruso; three days, Morisani; four days, Postiglione; and even six days, Freund). Under such circumstances it is

¹ Wyder: *Archiv für Gynäk.*, 1888, vol. xxxii. p. 60.

² Wyder: *Ibid.*, p. 76.

³ Leopold: *Ibid.*, 1889, vol. xxxiv. p. 313.

⁴ Caruso: *Ibid.*, 1883, vol. xxxiii. p. 255.

not likely that anybody would feel tempted to perform Cæsarean section. These cases would be looked upon as requiring *Porro's operation*, which has a mortality of nearly 57 per cent. for the mother.¹

Morisani recommends to try the *forceps* before performing symphysiotomy, but the operator ought not to use much force. If he succeeds he may extract a dead child, or one with a fractured skull or internal hemorrhages, that dies within a few days, or survives to be an idiot; besides that, the bruising of the maternal tissues endangers the mother's life or makes her speedy recovery doubtful. With a true conjugate between $2\frac{3}{4}$ and 3 inches (7-7.5 cm.), it is better to perform symphysiotomy at once.

The same dangers surround *version* in a contracted pelvis. In cases in which this operation is indicated we should rather perform symphysiotomy up to the upper limit of that operation, $3\frac{1}{2}$ inches.

Symphysiotomy has been performed *for the second time*, on the same woman, in five case, and every time with success.

Although we have seen that symphysiotomy has been performed successfully after the woman had been long in labor, we should not voluntarily delay the operation. Now that we know its limits and know how good the prognosis is, we ought to insist on its performance as soon as labor is sufficiently advanced. After that, delay causes only unnecessary pain and uneasiness to the mother, adds to her danger of sepsis, and threatens the child's life.

We have all the time spoken of the measurements of the pelvis, but it is evident that if the pelvis is normal and the child too large, the difficulty will be just the same, only it requires a good deal more experience and judgment on the part of the obstetrician to see the indication. By placing the index finger in the vagina and seizing the head with the thumb and finger of the other hand above the symphysis, an experienced accoucheur can form a pretty accurate idea of its size. At the same time he will examine the size of the fontanelles and the width of the sutures, and thus be enabled to judge of its compressibility.

Those who have followed me through this, as I hope, dispassionate essay, in which I have tried to keep as far away from reckless enthusiasm as from pusillanimous distrust, will have seen that the indications for symphysiotomy can only be based upon exact pelvimetry; that it may be a very easy and a particularly difficult operation; and that it by no means can be foreseen in what way the operation is to be performed, or if other operations have to be added or substituted. It is, therefore, an operation which ought not to be undertaken by anybody who is not familiar with the way of measuring a pelvis or judging of the size and of other peculiarities of a child *in utero*, who has not the necessary

¹ Lebedeff: Archiv f. Gynäk., 1887, vol. xxxi. p. 237.

instruments for this and other operations, and who is not capable of performing all other obstetric operations, inclusive of Cæsarean section and Porro's operation.

The year 1892 has been a remarkable year for symphysiotomy. Not only has it spread over the world, not only have twenty-six operations been performed by fifteen operators without a maternal death, but the more than a century old operation has even had offspring. Two children have been born to it. One is *ischio-pubiotomy*, proposed by Farabeuf and performed successfully by Pinard for an obliquely contracted pelvis, the operation consisting in cutting with a chain-saw the horizontal ramus of the pubes of the narrow side 5 cm. (2 in.) from the symphysis, and the corresponding place where the descending ramus of the pubis and the ascending ramus of the ischium meet, and thus taking advantage of the two pelvic hinges left movable, the symphysis pubis and the sacro-iliac joint of the other side.¹ The other is the case of symphysiotomy in a man referred to above.

But don't let us become bewildered, and don't let us be ungrateful. There is one country and one man to whom we owe symphysiotomy. Italy never gave it up, and Morisani preached its value for many years to deaf ears. In making this man an honorary Fellow, the American Gynecological Society has honored itself.

BIBLIOGRAPHY.

- Albarran*: Symphysiotomy in a Man. Medical Weekly, Jan. 20, 1893.
Biermer: Zur wissenschaftlichen Begründung der Symphysiotomie. Centralbl. f. Gyn., Dec. 24, 1892.
Billroth: Allgemeine chirurgische Pathologie und Therapie. Berlin, 1866.
Braune, Wilhelm: Topograph. Anatomischer Atlas. Leipzig, 1875.
Caruso: Contributo alla Pratica della Sinfisiotomia. Centralbl. f. Gynäk., 1892, No. 45, xvi. 891.
 — Die neuesten Ergebnisse des conservativen Kaiserschnitts. Arch. f. Gynäk., 1888, xxxiii.
Charpentier: Centralblatt für Gynäkologie, Jan. 14, 1893.
Chiari: Topographische Verhältnisse des Genitales einer inter-partum Verstorbenen Primipara. Wien, 1885.
Corradi: Dell' Ostetricia in Italia. Bologna, 1874.
Farabeuf: Annales de Gynécologie, Dec. 1892.
Garrigues: Article on Puerperal Infection. American System of Obstetrics, edited by Hirst, 1889.
 — Guide to Antiseptic Midwifery in Hospitals and Private Practice. Detroit, Mich., 1886.
 — Cotton-root as a Uterine Hæmostatic. Post-Graduate, Jan. 1888, vol. ii., No. 2.
 — The Improved Cæsarean Section, Am. Journ. Obstetrics, April, May, June, 1883, xvi.
Harris: Revival of Symphysiotomy. AMER. JOURN. MED. SCIENCES, Jan. 1883.
 — The Remarkable Results of Antiseptic Symphysiotomy. Amer. Journ. of Obstet., Oct. 1892.

¹ Farabeuf: Annales de Gynécologie, Dec. 1892, p. 426.

- Hirst*: Case. Medical News, Oct. 15, 1893.
- Hunter, William*: Gravid Uterus. Sydenham Society. London, 1851.
- Jewett*: A Case of Symphysiotomy. Brooklyn Med. Journ., Nov. 1892.
- Kilian*: Operative Geburtshülfe. Bonn, 1849.
- Lebedeff*: Kaiserschnitt oder Kraniotomie bei der lebenden Frucht? Arch. f. Gyn., 1887, xxxi.
- Leopold*: Centralblatt für Gynäkologie, July 30, 1892, xvi., No. 30 (2 cases).
- 25 Erhaltende Kaiserschnitte und die Stellung der Sectio Cæsarea zur Perforation. Arch. f. Gynäk., 1889, xxxiv.
- Lie*: Perineum. Christiania, 1879.
- Lusk*: Science and Art of Midwifery. Second edition. New York, 1885.
- McKenna, Harry*: Case. Medical News, Feb. 4, 1893.
- Mangiagalli*: Una Probabile Risurrezione nel Campo dell' Ostetricia. Milano, 1882. Medical News, Editorial, 1892.
- Michael*: Case. Amer. Journ. Obstetrics, Feb. 1893, xxvii, No. 2.
- Morisani*: Annales de Gynécologie, April, 1892, xxxvii. p. 241.
- Annali di Ostetricia, 1881, vol. iii., No. 10.
- Manuale di Ostetricia. Napoli, 1883.
- Müllerheim* (i. e., Freund's case): Ueber die Symphyseotomie. Centralbl. f. Gynäk., July 30, 1892, xvi., No. 30, p. 588.
- Piccinini d'Asti*: Symphysiotomie sous-cutanée. Annales de Gynécologie, 1877, viii. p. 317.
- Pinard*: Annales de Gynécologie, Feb. 1892, xxxvii. (13 cases).
- Porak*: Annales de Gynécologie, Sept. 1892.
- Quain's Anatomy*, 9th ed., New York, 1882.
- Reynolds, E.*: Remarks on Symphysiotomy. Trans. Amer. Gyn. Soc., 1892, xvii, p. 127.
- Spiegelberg*: Lehrbuch der Geburtshülfe. 1878.
- Spinelli*: Annales de Gynécologie, Jan. 1892.
- Törngren*: Zwei Symphysiotomien. Centralbl. f. Gynäk., Dec. 10, 1892, xvi. p. 953.
- Truzzi*: Centralbl. f. Gynäk., Jan. 14, 1893, xvii. p. 38.
- Von Velits*: Case. Centralbl. f. Gynäk., Oct. 8, 1892, xvi., No. 40, p. 777.
- Wyder*: Perforation, künstliche Frühgeburt und Sectio Cæsarea in ihrer Stellung zur Therapie beim engen Becken. Archiv für Gynäk., 1888, xxxii.
- Zweifel*: Ueber Symphyseotomie und Symphysenruptur. Centralbl. f. Gynäk., Nov. 5, 1892, xvi., No. 44, p. 857.

MOVABLE KIDNEY; WITH A REPORT OF TWELVE CASES TREATED BY NEPHRORRHAPHY.

BY GEORGE M. EDEBOHLS, A.M., M.D.,
GYNECOLOGIST TO ST. FRANCIS HOSPITAL, NEW YORK.

(Concluded from page 259.)

NEPHRORRHAPHY.—The main object of this communication is to advocate the performance of nephrorrhaphy, or fixation of the kidney by suture, in all cases of movable kidney where the patient's life is endangered by the persistence of the condition, or in which the sufferings are of such an aggravated character as to make life a burden. It

is understood, of course, that a careful diagnosis must precede the operation. Such diagnosis must not be confined to the mere detection of a movable kidney, but must include a complete canvass of the patient's physical condition, all the organs, but especially the generative, being thoroughly interrogated for evidence of disease. Only after such thorough investigation can it be decided whether the symptoms, or the majority of them, depend upon movable kidney, and whether nephrorrhaphy is likely to afford relief. In many cases it will be found that operations upon the genital organs are indicated in addition to nephrorrhaphy. Whenever possible, all the various operations necessary in a particular case should be performed at the same sitting.

I will now describe the operation of nephrorrhaphy as I have practised it :

The patient is placed upon the table in the left lateral (Sims's) position. Two small, firm pillows or cushions are so placed upon the table as to press into the left lateral and anterior regions of the abdomen, crowding the viscera upward to the site of operation and putting the latter well upon the stretch by separating, as far as possible, the right twelfth rib from the crest of the right ilium. The same antiseptic and aseptic precautions are observed as at a *cœliotomy*. The incision, made along the outer edge of the erector spinæ muscle, should in all cases extend the entire distance between the lower edge of the twelfth rib and the crest of the ilium. It should be made more or less oblique, according to the lesser or greater distance between these points. The superficial fat, the tendon of the latissimus dorsi, and the conjoined tendon of the internal oblique and transversalis are successively divided along the whole length of the cutaneous incision until the peri-renal fat is reached. The outer fibres of the quadratus lumborum occasionally overlap the line of incision, and are then cut through along their length. The fatty capsule is penetrated by a small incision until the kidney with its capsula propria is detected at the bottom of the wound. Palpation of the kidney, with one or two fingers, through the wound of the fatty capsule, will enable us to get our bearings and determine the extent to which the length of the incision in the fatty capsule should be increased in both the upward and downward directions. The fatty capsule is incised along the whole length of the convexity of the kidney, after which it is drawn out of the wound as far as it will go, and the redundancy of the fat sac is cut off on either side at a level with the bottom of the wound. In doing this care must be exercised not to open the peritoneum at the lower pole of the kidney. The trimmed edges of the fatty capsules are secured with a small pair of T-shaped forceps for guidance in the subsequent suturing. The delicate part of the work now begins. The capsula propria of the kidney is incised along the whole length of the convexity of the organ in the mesial line. To do

this successfully the kidney must be moved up and down so as to expose successively, at the bottom of the wound, the lower and upper halves of the organ. A pair of tenaculum forceps or two are of material aid in this and the subsequent parts of the operation. They must, however, be used with exceeding gentleness, as the kidney substance is exasperatingly friable, and they readily tear out. During this and subsequent steps of the operation it is of paramount importance that the kidney be pressed well into the bottom of the wound, so as to be readily accessible. If the two cushions spoken of at the beginning have been well placed under the left loin, nothing further is generally necessary, the kidney being well sustained in place, merely moving rhythmically upward and downward with respiration. If the cushions are not properly placed, or prove insufficient, the hand of an assistant pressing upon the abdomen so as to crowd the kidney into the wound must be made to take their place or to supplement them. After the capsula propria has been incised it is stripped off from the kidney substance on either side, until about one and a quarter centimetres of the kidney substance are exposed on either side along the whole length of the incision through the capsule, thus making raw surface ten to twelve centimetres long by two and a half centimetres wide for union with the deep parts of the lumbar incision. It is just here where nephrorrhaphy performed by stitching the fatty capsule alone, or by stitching the kidney without opening its capsula propria, failed, both the fatty capsule and the capsule proper being tissues in no way adapted to firm cicatricial union with contiguous parts. The stripped off capsula propria is not removed, but is doubled backward upon the still adherent portion like the lapel of a coat.

Thus far the steps of the operation have been identical in all my cases. In the method of suturing, however, I have made slight variations. At first I sewed with silkworm-gut, embracing on either side, in each suture, skin, superficial fat, the tendons of the abdominal muscles, the cut and trimmed edges of the peri-renal fatty capsule, the reflected as well as the still adherent capsula propria. The loop of the suture penetrated the kidney substance to the depth of one to one-and-a-half centimetres. Five or six such sutures were usually passed and tied upon the skin after a rubber drain had first been passed to the bottom of the wound and caused to lie along the raw kidney substance its whole length, with an end emerging at either angle of the wound. In my later cases I attached the kidney to the deeper and firmer tissues of the abdominal walls, the muscles and aponeuroses, by buried sutures of kangaroo tendon or silkworm-gut, passing a drain composed of ten or twelve silkworm-strands along the raw kidney surface, instead of the rubber drain. The purpose of the drain is twofold; first, to remove all secretions, which might interfere with primary

union, from the depths of the wound, and secondly, to favor firm cicatricial union by mild irritation of the raw kidney substance and the contiguous deep tissues of the abdominal wound. In tying the deep buried sutures, whether of silkworm-gut or of kangaroo tendon, care must be exercised not to draw them too tightly, as they readily cut through the friable kidney substance. The skin and superficial fat are closed over the deep buried sutures by a running suture of catgut. Union by first intention has been the rule. The dressings are changed for the first and last time on the eighth day, when the drain is removed. The patient is kept upon the back for three weeks, and then allowed to sit up and go about as she pleases.

Although the stitches are passed deeply through the kidney substance, I have in only one case, a double nephrorrhaphy at one sitting, observed hæmaturia or albuminuria after operation, though other writers mention these as of occasional occurrence. Since the experiments of Tuffier have demonstrated that destroyed or ablated kidney tissue is readily and speedily replaced, under ordinary circumstances, by a liberal regeneration of new kidney structure, we need no longer take into account the slight traumatism inflicted by the passage of needles and sutures.

The mortality of the operation should be practically *nil*. Of my twelve cases I lost one in which the peritoneum was accidentally opened, and a diphtheritic infection of that membrane unfortunately occurred. The details are narrated in the history of the case as recorded below.

Of the eleven cases which recovered, one, a double nephrorrhaphy performed at one sitting, is as yet too recent to speak of final results. A second patient has not as yet left her bed. Of the other nine, in not one has the sutured kidney, to my knowledge, become movable, the first patient having been operated upon February 8, 1890, and the last, four months ago. Both anatomical and therapeutical results are all that could be desired. None of my patients have worn a supporter of any kind since operation.

I have in the above endeavored to state facts and formulate views based upon my own experience and observations, as well as upon the work of those authors who have preceded me in writing upon the subject of movable kidney. I have avoided lengthy quotations from and frequent references to the writings of others, not from want of appreciation of their work, but from a desire not to extend unduly the limits of this paper.

I append the histories of all the cases of movable kidney, twelve in number, in which I have performed nephrorrhaphy.

CASE I. *Movable right kidney; endometritis and hypertrophic elongation of cervix; nephrorrhaphy, with relief of symptoms and permanent fixation of right kidney; subsequently movable left kidney, for a time, with return of symptoms; final cure.*—L. K., twenty-two years, single, seamstress,

was admitted to hospital January 23, 1890. Menstruation began at thirteen, and with the exception of one year of amenorrhœa, has been regular, though scanty, ever since. Three years ago had a severe and prolonged attack of malarial fever. Since then she has suffered continuously with extreme nervousness, hysterical manifestations, almost constant cardiac palpitation, pyrosis, dyspepsia, constipation, occasional pains in back, and more or less dysmenorrhœa.

Examination: Tubes and ovaries normal in size and position, not tender on pressure. Uterus normal in position; corpus normal in size, cervix markedly elongated. Endometritis. Right kidney normal in size, freely movable between its normal position and a point just within the anterior superior spine of the ilium. Left kidney in normal position.

Nephrorrhaphy, February 8, 1890, after the method described in the body of the paper, the uppermost kidney suture passing through the eleventh intercostal space and embracing the twelfth rib. Uneventful recovery. Patient discharged March 7, 1890.

One year later the patient gave the following account of herself: Following the operation the nervousness, cardiac palpitation, and stomach symptoms disappeared almost entirely. The dysmenorrhœa and occasional backache, however, persisted, although in less severe degree. For six months she regarded herself as substantially well, when all the old symptoms, one by one, returned. A slight cough developed in addition.

Examination showed persistence of the endometritis and a slight swelling of the left tube. Right kidney immovably fixed behind the scar of lumbar incision. Left kidney movable to the extent of seven to eight centimetres in a downward direction. Signs of incipient phthisis at apices of both lungs. Patient requested operative fixation of the second kidney, but in view of her poor family history (three sisters dead of pulmonary consumption) the condition of her lungs, and a suspicion of developing tubal tuberculosis, I advised waiting.

The patient is, nearly two years and nine months after operation, the picture of perfect health. Immediately following the last report, a year and a half ago, she improved in health and got married. The symptoms due to the movable left kidney slowly but completely disappeared as she grew stouter. She has had absolutely nothing to complain of for a year past, and is now two months pregnant. The right kidney, as several of you have verified by examination, is immovably fixed to the scar of the lumbar incision. The lower edge of the left kidney can be barely palpated, its previous mobility having almost entirely disappeared, due no doubt to increased deposit of peri-renal fat.

CASE II. Movable right kidney; retroversion of uterus; laceration of cervix uteri; trachelorrhaphy and shortening of round ligaments followed by but slight relief; nephrorrhaphy followed by immediate and complete disappearance of symptoms.—Mrs. A. LeB., thirty-seven years, married, mother of five children. Last confinement three years ago; no miscarriages. Menstruation regular, with rare exceptions, the flow lasting seven days. Family history indifferent. For two or three years past has been troubled with general nervousness, and a moderate degree of cardiac palpitation and gastric dyspepsia. During the past four months pains in the left epigastrium, in tenth intercostal space posteriorly, and in left inguinal regions have been the prominent symptoms. Anorexia; bowels regular.

Examination, in narcosis, May 15, 1890. Ovaries and tubes normal in size. Uterus retroverted in second degree. Corpus uteri normal in size. Cervix slightly thickened and enlarged, lacerated for 2.5 centimetres to left. Ectropion of cervical mucosa. Vagina and vulva normal.

Right kidney normal in size, displaced downward and forward to pelvic brim. From this position it can be freely moved across the bodies of the lumbar vertebræ to the left of the spine, thence upward on the left side, and again across the spine to its normal position. Left kidney in normal position.

May 19, 1890. Trachelorrhaphy and shortening of round ligaments, the left ligament being shortened nine, and the right ten centimetres. Primary union of all wounds.

These operations were followed by but slight relief of symptoms, the majority of which were construed as due to the movable right kidney.

Nephrorrhaphy, June 12, 1890, after the method described. The peritoneum was accidentally opened near the lower pole of the kidney, the rent being immediately closed by running catgut suture. Uneventful and afebrile recovery. Patient discharged four weeks after operation.

Two months later the patient presented herself with the statement that since the nephrorrhaphy she had been perfectly well for the first time in many years, all her disagreeable symptoms having disappeared. The right kidney was found securely anchored to the cicatrix of the lumbar incision. Uterus in normal anteversion. In spite of persistent efforts to trace the patient I have been unable to learn anything of her since.

CASE III. *Mobility of both kidneys; endometritis and catarrhal salpingitis; emphysema pulmonum; nephrorrhaphy for fixation of right kidney; complicated recovery; permanent fixation of right kidney and partial relief of symptoms; subsequent increase of adipose tissue, resulting in better support of left kidney, and a complete cure.*—M. A., thirty-four years, single, religious. Family history poor, her father, a brother, and a sister having died of pulmonary phthisis. Menstruation regular, the flow lasting five to six days.

With the exception of symptoms due to pulmonary emphysema patient was well up to four years ago. At that time she began to notice a frequent swelling of the abdomen, and to be troubled with general nervous symptoms and gastric indigestion. The nervousness and dyspepsia gradually became intensified, pains in both inguinal regions were superadded, and the periods became painful. Leucorrhœa, constipation, and occasional scalding on micturition.

Examination, April 25, 1891. Uterus normal in size and position. Endometritis corporis et cervicis. Bilateral catarrhal salpingitis, the tubes being slightly thickened and exquisitely sensitive on pressure. Ovaries normal.

Right kidney normal in size and freely movable in the arc of a circle having its centre at the normal position of the kidney, and a radius of 10 centimetres. Left kidney movable to extent of 5 centimetres in a downward direction.

Nephrorrhaphy, April 29, 1891. Chloroform employed in preference to ether on account of the tendency to bronchitis. Operation as described. Convalescence complicated and retarded by an acute catarrhal pneumonia, involving the lower half of right lung, and lasting ten days; by

an acute endocarditis of a week's duration, and by the formation of a peri-renal abscess, which kept discharging until six weeks after operation, when it definitely healed. Patient discharged June 25, nine weeks after operation.

Permanent relief of the majority, though not of all, the symptoms followed the operation. A year following the operation the right kidney remained firmly anchored in its new position; the mobility of the left kidney, the endometritis, and the salpingitis remained unchanged. Curettement and fixation of left kidney advised. Patient feels so comparatively well, however, that further operative interference is declined.

Patient last seen a few days ago, a year and a half after operation. Her weight had increased from 105 pounds at time of operation to 145 pounds. The great increase of fat has resulted in better support and decidedly lessened mobility of the left kidney. Right kidney firmly anchored to lumbar scar. With the exception of a slight leucorrhœa patient considers herself in the best of health, and has absolutely nothing to complain of.

CASE IV. *Movable right kidney; nephrorrhaphy; death from acute septic (diphtheritic) peritonitis thirty-six hours after operation.*—A. B., thirty-four years, single. Referred to me by Dr. A. Strong. Family history indifferent. Menstruation regularly every three weeks, the flow lasting three days. Has suffered much and constantly during the past four or five years with dyspeptic symptoms, of which severe pain in the epigastrium, most intense about one hour after meals, was most bitterly complained of. Occasional attacks of nausea, vertigo, vomiting, and constant anorexia the other main symptoms.

Examination, April 28, 1891. Genitalia normal in every respect. Right kidney movable to extent of twelve centimetres forward and downward. Left kidney in its proper place.

Nephrorrhaphy, April 30, 1891. Usual incision—more oblique than ordinarily, on account of limited space between ribs and crest of ilium. Peritoneum accidentally opened near lower pole of kidney. Some time was spent in examining the peritoneal rent to make sure that no viscus was wounded. After satisfying myself that such was the case, the peritoneum was closed by a running catgut suture, and the operation completed in the customary manner. Six hours after operation the patient developed symptoms of acute peritonitis, to which affection she succumbed thirty-six hours after operation.

Autopsy, twelve hours after death. Peritoneum everywhere intensely injected and its lustre lost to a great degree. No adhesions. The injection was most intense in the vicinity of the right kidney, where also a thick reddish fluid to the amount of seventy-five grammes had collected. The peritoneal wound made at operation involves the parietal peritoneum only, no viscus being injured. Kidney sutures were examined and found not to have cut through the kidney substance, which they traversed at a depth of a little over one centimetre from the surface of the organ.

On the morning of operation I awoke with a pain in the throat which I disregarded, not being subject to throat affections. The operation was performed at 9 A.M. Immediately after the operation I noticed that the pain in the throat had increased and that I was slightly feverish. A colleague examined my throat and pronounced me suffering from diphtheria, a diagnosis which further developments con-

firmed. I believe that while I was bending over and examining the opened peritoneum the latter became infected from the expired air from my throat. The foudroyant character of the peritonitis, unusual even in the most septic forms, would tend to bear out the supposition. Unfortunately, no bacteriological investigation of the peritoneal contents was made.

CASE V. *Movable right kidney; endometritis; bilateral catarrhal salpingitis; curettement, followed by partial relief; nephrorrhaphy, seven months later, followed by complete cure.*—A. H., thirty-three years, single, cloakmaker. Father died of pulmonary consumption. Periods regular, every four weeks, lasting five to nine days. Leucorrhœa for the past twenty, and severe dysmenorrhœa for the past fifteen years. Had a fall eighteen months ago, and constant pain since over pubic region, aggravated on standing or walking. Urination frequent, but without pain or scalding.

Following an attack of typhoid fever and pneumorrhagia six years ago, the following symptoms developed in addition to those above enumerated. It may be added that before the attack of typhoid fever the patient was quite stout, but has never since regained her original weight. She has become moderately nervous, appetite has failed, pain in left half of epigastrium after eating; flatulence, constipation, and cardiac palpitation have developed.

Examination, September 3, 1891. Uterus in normal position, slightly and uniformly enlarged. Left ovary and tube normal in size, prolapsed into Douglas' sac. Right ovary and tube normal in size, fastened in normal position by adhesions. Both tubes tender on pressure. Endometritis; double catarrhal salpingitis.

Kidneys not examined.

September 14, 1891. Curettement followed by swabbing of uterus with equal parts of carbolic acid and glycerin and gauze drainage.

March 28, 1892. Patient reports that the dysmenorrhœa and the leucorrhœa, from which she had suffered so long and severely, had entirely disappeared since the curettement, the menstrual flow lasting only half as long as formerly and being entirely painless. The nervousness, dyspeptic symptoms, epigastric pains, and cardiac palpitation persisted as formerly.

Examination shows quite normal condition of uterus and appendages. Tubes no longer sensitive on pressure.

Right kidney movable some eight centimetres in a downward direction, a condition entirely overlooked at previous examinations.

Nephrorrhaphy, April 8, 1892, in usual manner, except that kidney was fastened by buried suture of kangaroo tendon. Primary union; uneventful convalescence.

July 24. Pain in left side has entirely disappeared. Appetite and digestion are steadily improving. Patient considers herself perfectly well. Right kidney remains firmly anchored in its new position.

October 27. Every one of her old symptoms has entirely disappeared. Right kidney, on examination to-day, found securely anchored to the scar of the lumbar incision.

CASE VI. *Movable right kidney; laceration of cervix uteri; nephrorrhaphy, curettement, and trachelorrhaphy, at same sitting; cure.*—Mrs. E. B., twenty-three years, married, mother of three children, the last born eighteen months ago. Symptoms date from December, 1891.

Pain in left half of epigastrium, worse after eating; anorexia; emaciation; nervousness, and especially restlessness at night; headaches; dysmenorrhœa.

Examination, April 23, 1892. Uterus normal in size and position. Adnexa on both sides normal. Cervix uteri slightly lacerated.

Right kidney movable to the extent of ten centimetres in a downward direction. Left kidney in normal position.

Nephrorrhaphy, curettement, and trachelorrhaphy, at same sitting, April 26th. Kidney fastened by buried kangaroo sutures. Primary union of all wounds.

Relief of all symptoms began within two weeks after operation and persisted when patient was last seen, three months later. Kidney remains fixed in its new position.

October 27. Patient examined, and right kidney found securely fastened to lumbar scar. All her symptoms had vanished as if by magic on the day of operation and have remained away since.

CASE VII. *Movable right kidney; retroversion of uterus; endometritis; double catarrhal salpingitis; curettement, shortening of round ligaments, and nephrorrhaphy, at same sitting; cure.*—A. B., twenty-five years, single, trained nurse; suffered from acute arsenical poisoning in 1887, from typhoid fever and yellow fever in 1888, from influenza and pneumonia in 1891. Menstruation was regular until three years ago; it has since gradually become less frequent until now it occurs about once in four months and is very scant. Four years ago, as a result of severe strain at lifting, the uterus prolapsed completely outside of the body, necessitating reduction under ether.

For past four years she has had chronic dyspepsia, pains of a neuralgic character in various parts of abdomen, headache, extreme nervousness, and pronounced hysteria, with almost constant cardiac palpitation. During the past year leucorrhœa, a pressure pain over pubis, and occasional tumefaction of abdomen have been added to the above symptoms.

Examination, May 8, 1892. Adnexa uteri normal in size, sensitive on pressure. Uterus undersized; retroverted in first degree.

Right kidney of normal size, movable for ten to twelve centimetres in a downward and forward direction. Left kidney cannot be palpated.

Curettement, shortening of round ligaments, and nephrorrhaphy, at one sitting, May 10, 1892.

All operative wounds healed by primary union. Ten weeks after operation patient reports as follows: With the exception of weakness (and well-marked anæmia) she now considers herself perfectly well. The dyspeptic symptoms disappeared two weeks and the leucorrhœa three weeks after operation. Neither has returned. The hysteria and nervousness yielded more slowly but are now almost entirely gone. She was practically a new woman. On examination the uterus is found in normal anteversion and the right kidney securely moored in its normal position.

Efforts made within the past two weeks to trace the patient have proved unsuccessful.

CASE VIII. *Movable right kidney; endometritis; salpingitis catarrhalis; curettement and nephrorrhaphy; cure.*—J. H., eighteen years, single; began to menstruate at eleven, and ever since has suffered from severe dysmenorrhœa, the flow occurring every four weeks and

lasting three to fourteen days. She was otherwise well until thirteen years of age, when she had a severe attack of diphtheria. Following this, the following symptoms developed one by one: Marked emaciation, pains in left inguinal and left epigastric regions, leucorrhœa, anorexia, dyspepsia, periodical tumefaction of abdomen, marked nervousness, headaches, cardiac palpitation, inability to sleep upon the left side, constipation. For the past five years she has been under the care of many physicians, travelling to Europe a number of times in hopes of finding relief. For the above history I am indebted to her family physician, Dr. George C. Stiebeling, who brought the patient to me for examination, May 13, 1892.

Exaggerated anteversion of uterus. Catarrhal salpingitis of left side with slight thickening of tube. Right appendages normal. Endometritis.

Right kidney moderately enlarged and movable ten to twelve centimetres downward and forward to just behind umbilicus. Left kidney cannot be palpated. Spleen decidedly enlarged.

May 17, 1892. Curettement followed by nephrorrhaphy.

Uneventful convalescence, the wound healing by primary union.

Ten weeks after operation patient reports as follows: The first period following operation was the only painless one of her life. The second was as painful as usual; the third again painless. Every symptom she formerly complained of, with the exception of the nervousness, disappeared as if by magic during the first two weeks after operation, not to appear again. The nervousness has diminished so greatly as to be no longer uncomfortable. The mental condition has changed from one of melancholy to cheerfulness and happiness.

Right kidney remains where it was anchored at operation. Pelvic organs apparently normal.

October 26. The patient remains perfectly well, every symptom, including the nervousness, having entirely and permanently disappeared. Right kidney remains securely anchored in its normal position.

CASE IX. *Movable right kidney; Laceration of cervix uteri; endometritis; curettement, amputation of cervix, and nephrorrhaphy, at one sitting.*

—Mrs. L. M., forty-three years, married, mother of three children, the youngest being eight years old. Menstruation began at eighteen years, and was regular up to eighteen months ago. At that time an amenorrhœa of three months was followed by the passage of clots (miscarriage?) and free bleeding lasting some six weeks. As a result she became very thin and anæmic, and from this period dates her symptoms. These are: occasional leucorrhœa and scalding on micturition, pain after eating, gaseous eructations, transitory pains in left epigastrium, nervousness, and irritability. These symptoms have gradually increased in intensity. She was placed under my care by her family physician, Dr. A. Rupp.

Examination, June 11, 1892. Ovaries normal in size. Both tubes slightly sensitive to pressure, but not enlarged. Uterus in normal position; corpus of normal size; cervix slightly hypertrophied and lacerated for 2.5 cm. to left. Eversion and erosion of cervical mucosa. Endometritis. Right kidney movable in a downward and forward direction, until its lower pole reaches the median line at a point 8 centimetres below the umbilicus. Thence it can be swept around in a circle across the spine to the left and back to its normal position on the right side. Kidney not enlarged.

June 14, 1892. Curettement, amputation of cervix, and nephrorrhaphy at same sitting. Primary union of all wounds.

Patient discharged July 6th, feeling well, and with right kidney in good position.

October 22. Patient presents herself to-day with the statement that all her symptoms have disappeared, and that she considers herself perfectly well. On examination the right kidney is found securely anchored to the scar of the lumbar incision.

CASE X. *Movable right kidney; descensus et retroversio uteri, both in first degree; endometritis; laceration of cervix uteri and of perineum; curettement, amputation of cervix, and perineorrhaphy at one sitting, followed by scarcely any relief; subsequently ventrofixation of uterus and nephrorrhaphy, followed by speedy disappearance of symptoms.*—Mrs. S. K., thirty-eight years, married, mother of three children, the youngest being six years of age. Sent by Dr E. J. Messemmer. Menstruates regularly for five days every four weeks. Ever since birth of first child, nine years ago, she has been troubled with the following ills: leucorrhœa, backache; pains in all parts of body, fugitive in character (spinal irritation); dizziness, nervousness, anorexia, dyspeptic symptoms, cardiac palpitation.

Examination, May 10, 1892. Appendages normal on both sides. Uterus prolapsed and retroverted, both in first degree. Corpus normal in size. Cervix lacerated bilaterally, thickened and elongated. Moderate cystocele and rectocele. Perineum and lower end of vaginal tube lacerated in first degree. Right kidney movable ten centimetres in a downward direction. Left kidney in normal position.

May 13, 1892. Curettement, amputation of cervix, and perineorrhaphy. Primary and firm union. Patient discharged June 9, 1892.

In spite of the successful result of the plastic operations, patient experienced only moderate relief, the chief annoying symptoms persisting. Among these were various pains, an uneasy feeling in the right lumbar region, great nervousness, dyspeptic symptoms, and a full feeling in vagina.

Examination, June 26. Slight cystocele persists; rectocele has disappeared. Uterus still low in pelvis and retroverted in first degree. Kidneys as at first examination.

June 28. Nephrorrhaphy and ventrofixation of uterus at same sitting. The nephrorrhaphy in this case proved unusually difficult, the patient being short and stout, and the distance between the last rib and crest of ilium measuring but four centimetres. An unusually oblique incision was employed, and the operation successfully completed under great disadvantages.

The nephrorrhaphy and the cœliotomy wounds healed by first intention. Convalescence was complicated and prolonged by an acute catarrhal pneumonia which developed a week after operation, and ran a course of one week, and by a phlegmasia alba dolens of right leg (thrombosis of right femoral vein), beginning two weeks after operation and keeping the patient in bed until July 27th. Discharged August 6th, with both uterus and kidney held well in place. Nearly every one of her former symptoms disappeared before she left hospital.

October 27. Every symptom of which the patient formerly complained has disappeared and remained away. The right leg still a little

swollen. The sutured kidney remained securely anchored in its normal position.

CASE XI. *Mobility of both kidneys following removal of a large ovarian cystoma; double nephrorrhaphy at one sitting.*—M. B., forty years, single, domestic, was referred to me by Dr. Carl Edel. On June 17, 1892, I removed from patient a large, many-chambered ovarian cyst filling the abdomen. Twisting of the pedicle had occurred, the cyst had become strangulated, and all its chambers were filled with blood, fluid and clotted. Patient made an uneventful recovery from the ovariectomy, and was discharged four weeks after operation. Dyspeptic symptoms and general nervousness, which had existed for some time prior to the development of the ovarian tumor, but had disappeared with the increase of the abdominal enlargement, now reappeared with increased severity. On examination before leaving hospital both kidneys were found to be freely movable; the right down to the anterior superior spine of the ilium, the left from 8–10 centimetres in a downward direction.

Double nephrorrhaphy, October 11, 1892, the left kidney being first sutured. I found it very difficult to operate on the left kidney, the organ showing a tendency to hide behind the ribs. It required one hour to sew the left kidney, and a further half-hour to fixate the right.

Patient has made a perfectly uneventful recovery. On the third day a slight transient albuminuria was noticed which disappeared in a few hours, not to return. This is the only one of my cases in which albuminuria was noted after nephrorrhaphy.

November 10, 1892. Patient left her bed three weeks after operation. Both kidneys are securely anchored in the loins, and the patient's symptoms have vanished.

I record the case more especially because double nephrorrhaphies are as yet comparative rarities.

In Lindner's collection of twenty-nine nephrorrhaphies, the double operation figures but twice: Hahn, in 1881, operated at two sittings, four months apart, upon the right and left kidneys of the same patient, and Kuster performed a double nephrorrhaphy at one sitting in 1883.

CASE XII. *Movable right kidney; retroversion of uterus; cirrhosis of left ovary; double uterus; mitral insufficiency; nephrorrhaphy, curettement, unilateral salpingo-oöphorectomy and ventrofixation of uterus at one sitting; recovery.*—K. H., twenty-three years, single, domestic, has been ill for nearly two years with a variety of symptoms, evidently due to a number of pathological conditions. The chief complaints noted are cough and dyspnoea on exertion, cardiac palpitation, cardialgia, frequent vomiting spells, nausea, gaseous eructations and distress after meals, constipation, pain in back, leucorrhœa, and coccygodynia.

Examination, October 15, 1892. Uterus somewhat large, retroverted in second degree. Tubes and ovaries on both sides normal in size, non-sensitive on pressure. Left ovary very hard (cirrhosis). Right kidney normal in size, movable seven to eight centimetres in a downward direction. Rude systolic bruit over left ventricle and apex of heart. Spleen moderately enlarged. Lungs normal.

Operative interference dissuaded from on account of the multiplicity of lesions conjoined with organic cardiac disease. The possibility of

death on the table was presented to the patient. She, however, insisted on operation, stating that she preferred risking her life in trying to get well to living further in the same misery.

On October 25, 1892, under ether anæsthesia, I performed nephrorrhaphy, curettement, salpingo-oöphorectomy (the left tube and calcarous left ovary being removed), and ventrofixation of the uterus, at one sitting. At the curettement it was noticed that the curette could be passed into two different cavities within the uterus, with a partition between them. On opening the abdomen the corpus uteri was found to be double (with a single cervix). The two halves were fused along the median line, each corpus having but one tube and ovary. The larger, right half of the uterus was ventrofixated in the usual way.

November 10. Patient has thus far made an uneventful recovery, is out of danger, and is feeling well.

RÉSUMÉ.—The subject of movable kidney is of paramount importance and interest to every practitioner of the healing art, but especially so to the gynecologist.

Movable kidney is of much greater frequency in the human female than is generally supposed. Of a series of five hundred women examined by the author, ninety were found the possessors, amongst other things, of movable kidneys.

The affection *appears* to be comparatively rare among men.

In the overwhelming majority of cases the right kidney alone is movable.

Not every movable kidney produces symptoms.

The symptoms of movable kidney frequently both coexist with and simulate those of various diseases of the female sexual organs. The discriminating diagnosis may offer difficulties.

Atrophy or absorption of the peri-renal fat is the chief etiological factor in the production of movable kidney. Other causes assigned by various authors are: tight lacing, laxity of abdominal walls, congenital predisposition, and severe straining.

A distinction should be maintained between movable and floating kidney.

A movable kidney is one movable within a pouch or hollow formed within its own fatty capsule. A floating kidney has normal relations with that portion of its fatty capsule which it carries with it in its excursions, and is supplied with a mesonephron, the length of which determines the degree of mobility. This paper deals only with the movable kidney.

The symptoms are likely to be more distressing in the earlier than in the final stages of movable kidney.

The most characteristic combination of symptoms of uncomplicated movable kidney is the following: Digestive disturbances, chronic in character; epigastric pain, usually located somewhat to the left of the

median line; general nervousness; cardiac palpitation; inability to feel comfortable, or to sleep, when lying on the left side.

The other symptoms associated with movable kidney occur less frequently and are of secondary significance.

The symptoms of movable kidney are accentuated during menstruation and the early months of pregnancy. They disappear during the latter half of pregnancy and during the existence of large intra-abdominal growths.

The symptoms of movable kidney are due to pressure and traction upon, stretching, and irritation of various parts of the solar plexus of the sympathetic and of its branches. The theory of obliteration of the lumen of the duodenum, by pressure or traction, is insufficient to account for the symptoms.

A movable kidney is the easiest of all intra-abdominal conditions to diagnosticate. The diagnosis is made by palpation of the displaced organ.

A kidney once movable never again becomes firmly fastened in its normal position except by operative interference.

The symptoms due to movable kidney may be ameliorated by the dorsal decubitus, the Weir Mitchell treatment, massage, electricity, and abdominal supporters. All of these measures are, however, in the large majority of cases disappointing, and the benefit obtained, if any, is likely to prove only transient.

Nephrectomy, or extirpation of the movable kidney, is too radical and dangerous a resource as compared with nephrorrhaphy.

Nephrorrhaphy *properly* performed upon properly selected cases can, as demonstrated by appended histories, be depended upon to afford relief, with a good prospect of the permanency of the latter.

ADDENDUM.—From the date of reading this paper (October 27, 1892) to the date of revision of proof (March 10, 1893), I have performed ten further nephrorrhaphies for movable kidney. All of these made good and perfectly smooth recoveries, although in all of them but three, one or more additional operations were performed upon the genital organs at the same sitting. This makes my personal statistics twenty-two nephrorrhaphies with one death.

For buried sutures to fasten the kidney to muscle and aponeuroses, I now use silkworm-gut exclusively, having abandoned kangaroo tendon for reasons which this is not the proper place to enter upon.

I have had occasion since reading the paper to see again most of the eleven cases whose histories I have recorded above. In all of these, as well as in the ten patients since operated upon, the fastened kidneys remain securely anchored in their new position. In fact, I do not know of a single case in which I have performed nephrorrhaphy in which the fastened kidney again became movable.

For the sake of completeness I append an outline of the ten additional cases operated upon. Their histories are but a duplication of the twelve reported in full above, and to record them at length would be to weary the reader.

CASE XIII.—M. K., aged thirty-five years, married. Endometritis; laceration of cervix and perineum; adherent retroverted uterus; cystoma of right ovary; movable right kidney; insufficiency of mitral valve.

May 17, 1892. At one sitting: Curettage of uterus; amputation of cervix; ovariectomy; liberation and ventrofixation of uterus.

Recovery and partial disappearance of symptoms.

November 8, 1892. Nephrorrhaphy and perineorrhaphy at one sitting.

Recovery and complete cure.

CASE XIV.—S. S., aged twenty-seven years, married. Hæmatoma of left ovary; movable right kidney; hystero-epilepsy.

February 16, 1892. Unilateral salpingo-oöphorectomy, followed by disappearance of the epilepsy; the hysteria and symptoms due to the movable kidney persisting.

November 18, 1892. Nephrorrhaphy. Recovery, followed by disappearance of nearly all symptoms during the next two months.

CASE XV.—A. B., aged nineteen years, single. Antelexion of uterus; fungous endometritis; catarrhal salpingitis; movable right kidney.

September 12, 1891. Amputation of cervix uteri, with no relief of any kind.

December 22, 1891. Curettage and iodoform gauze drainage of uterus. Some relief followed this treatment.

During the spring of 1892, rapidly growing cystomata developed, under observation, in both ovaries.

June 28, 1892. Double ovariectomy and ventrofixation of uterus. Uneventful recovery, but persistence of the symptoms due to the movable right kidney.

November 29, 1892. Nephrorrhaphy. Recovery and complete cure.

CASE XVI.—A. L., aged twenty-five years, single. Emphysema pulmonum; bronchitis chronica; endometritis; movable right kidney.

December 2, 1892. Curettage of uterus and nephrorrhaphy. Recovery. Disappearance within two months of all symptoms except those due to pulmonary emphysema, and general nervousness, which latter has, however, considerably improved.

CASE XVII.—M. W., aged twenty-three years, married. Endometritis; catarrhal salpingitis; movable right kidney; pulmonary phthisis.

January 6, 1893. Curettage of uterus and nephrorrhaphy. Recovery and partial disappearance of symptoms. When last seen, two months after operation, was suffering from morbus maculosus Werlhofii.

CASE XVIII.—A. O'C., aged twenty years, single. Endometritis; movable right kidney; menstrual epilepsy.

January 6, 1893. Curettage of uterus and nephrorrhaphy. Recovery. Patient left hospital feeling well, but has not reported since.

CASE XIX.—K. O'R., aged thirty-one years, single. Movable right kidney; endometritis.

January 27, 1893. Curettage of uterus and nephrorrhaphy. Left hospital improved, February 20th, and has not been heard from since.

CASE XX.—M. B., aged eighteen years, single. Movable right kidney; endometritis.

February 10, 1893. Curettage of uterus and nephrorrhaphy. Horseshoe kidney. Recovery; still in hospital.

CASE XXI.—A. M., aged twenty-three years, single. Movable right kidney; pneumo-phthisis.

February 14, 1893. Nephrorrhaphy. Recovery; still in hospital.

CASE XXII.—G. C., aged thirty-one years, single. Movable right kidney; endometritis; left salpingo-oöphoritis; fissures of anus.

February 14, 1893. Curettage of uterus, nephrorrhaphy, and dilatation of sphincter ani. Patient still under treatment.

198 SECOND AVENUE, NEW YORK, N. Y.

A CONTRIBUTION TO THE STUDY OF THE FAMILY FORM OF SPASTIC PARAPLEGIA.

BY LEO NEWMARK, M.D.,

OF SAN FRANCISCO.

VARIOUS diseases of the nervous system affecting several members of a family, and depending on a congenital tendency, have been recorded in recent medical literature. Besides the hereditary ataxy of Friedreich, Thomsen's disease, the chorea of Huntington and the progressive muscular dystrophies, the list of family diseases now comprises the peroneal or leg type of amyotrophy; an hereditary form of progressive spinal muscular atrophy complicated with bulbar paralysis, observed by Bernhardt;¹ a form of progressive dementia associated with contractures, described by Hornén;² an hereditary periodic paralysis of the trunk and the extremities, reported by Goldflam;³ a disease characterized by dementia, ataxia, nystagmus, optic atrophy, studies by Nouné;⁴ and other nervous disorders, to some of which reference will be made later.

The present contribution on the subject of family diseases is based on the observation of two families in each of which several members are affected with spastic paraplegia, and in one of which there is also a case of bilateral spastic hemiplegia. It will, moreover, be seen that other members, while apparently healthy, exhibit a peculiarity which merits attention.

CASE I.⁵—Minna S., aged fifteen years, is a tall, intelligent girl. Her mother states that the child was born at term, and that delivery was very easy and rapid. There were no convulsions. It was noticed that the infant did not kick its legs about and push off the bedclothes like

¹ Virchow's Archiv, 1889. Bd. 115, H. 2.

² Neurolog. Centralblatt, 1890.

³ Transactions of the Tenth International Medical Congress.

⁴ Archiv für Psychiatrie, Bd. xxii.

⁵ I am much indebted to Dr. Kuckein, of Oakland, who called my attention to this family and who furnished some of the details of their history.

other children. She began to walk at the age of eighteen months; her gait was then observed to be peculiar and uncertain, and it gradually assumed its present characteristics. I saw her for the first time about four months ago. Hers is the typical gait of *spastic paraplegia*; she shuffles along with the body inclined forward, swaying somewhat from side to side, scraping the floor with her toes, and the heels drawn up from the ground. The lower extremities are flexed at hips and knees, the thighs strongly adducted and the foot in the position of equinus. The muscles are not wasted, and react well to the galvanic and faradic currents, with perhaps a very slight diminution of contractility. The knee-jerks and adductor-reflexes are very much exaggerated; there is no ankle-clonus. The girl has full control over her hands and arms; examination reveals not the slightest functional disturbance in them. But all the tendon reflexes of the upper extremities are in excess; also the jaw-jerk. Intelligence, sensation, sphincters intact. The teeth are good. There is neither nystagmus nor strabismus. There is no pronounced paresis of the extremities, the uncertainty of the gait being due rather to hypertonicity than to weakness of the muscles. It may be added that the patient uses a tricycle with considerable dexterity.

CASE II.—Carl S., aged five years, a brother of the above-described Minna S., presents the same abnormality, but in a less degree. His birth was attended with no difficulty, and occurred after a full period of pregnancy. When he began to walk, at the age of eighteen or nineteen months, his peculiar gait attracted attention; but even before that it had been noticed that the boy was accustomed to sit on the ground in a position different from that ordinarily assumed by children of his age; the legs were flexed on the thighs and rotated so that their inner surface and the inner border of the feet were in contact with the floor. For this position he still shows a predilection when playing. He has never had convulsions. The patient is very intelligent; his physical development corresponds to his age. When walking he clings to objects about him for support; if held by the hand he can walk a considerable distance. He proceeds in the characteristic shuffling manner, at times involuntarily raising the heels and scraping along on the tips of his toes. The thighs are adducted and the toes turned in. There is no wasting of the legs. Opportunity was afforded only once for an electrical examination; but the boy was recalcitrant, and no result was obtained. The knee-jerks are much exaggerated; there is a short foot-clonus. There is complete voluntary control of the upper extremities, but all the tendon reflexes are excessive; the jaw-jerk is easily elicited. Nystagmus and strabismus are absent; nor do sensation, the sphincters, and the special senses present any anomaly. The disease is said by the mother not to be progressive; on the contrary, continued exercise has diminished the spasmodic tendency. In both of these cases speech is normal. The girl has had the measles, both children have had whooping-cough, but have with these exceptions been well.

Inquiries into the family history elicited the following facts: The maternal grandfather is a hale German of advanced age, named M. He has been married twice; his first wife was the grandmother of the children Minna and Carl S. I have examined M., and found nothing abnormal about him, particularly no exaggeration of the reflexes. The history of the grandmother is enshrouded in mystery, but it would appear from what M. has at times been inclined to communicate, that

she had been almost totally deaf from childhood; her speech was abnormal; and, although she was able to write, and was even fond of reading, she is nevertheless described as having been mentally deficient and lacking in a sense of responsibility and duty. Her physical development was good, excepting the infirmity of hearing. Her family physician is said to have once remarked that "the girl should never marry." By this wife M. had two daughters, Minna—the mother of Minna and Carl S.—now aged forty, and Carola, aged thirty-eight, both of whom were born at term and without difficulty; and a son, August, who is said to have three healthy daughters. By his second wife M. had five children; one of whom died of consumption; another was examined by me and found to be healthy, with normal reflexes. There are said to be five grandchildren in this line, all of whom are healthy.

The daughter Minna was married to one S., now dead, who according to M.'s account had been treated for some time with mercury. It may be here stated that the family physician has never noticed anything of a syphilitic nature in Minna S. or her children. She is a well-built woman, of normal appearance. There is nothing peculiar in her gait. An investigation of her reflexes, however, shows that they are considerably exaggerated; a slight tap on the patellar ligaments produces a contraction of the quadriceps undoubtedly in excess of the normal; there is ankle-clonus; the tendon reflexes of the upper extremities and the jaw-jerk are also decidedly increased. Her children are: Fritz, twenty years old, healthy; reflexes normal. Louise, a tall girl of seventeen years, in whose appearance and walk nothing out of the ordinary is observed. But she presents the same *increase of reflexes* in the upper and lower limbs and the jaw as the mother. *Minna and Carl*, the children with spastic paraplegia already described. *Carola K.*, the sister of Minna S., is a healthy-looking woman. Her husband, K., is well and has normal reflexes. She herself has very much exaggerated knee-jerks; there is only an indication of ankle clonus, but a lively Achilles tendon reflex can be obtained; the "front tap contraction" of Gowers is easily elicited. The tendon reflexes of the upper extremities are all increased. The jaw-jerk is present, but is not excessive. Mrs. K. has borne seven children; labor was very difficult in every case.

The first child died during delivery; the second, Edward, aged fifteen years, was affected with *bilateral spastic hemiplegia*. Labor very difficult; instruments used, infant asphyxiated, and for a while considered dead. From his second to his fourth year he had two or three convulsions weekly. Between the ages of four and eleven no fits were noticed, but after the eleventh or twelfth year nocturnal seizures were observed. Of late no convulsive attacks have occurred. Has frequent headaches. Seems to be intelligent; is said to be fond of reading and to have a good memory. When he was nine months old his inability to sit upright and his habit of keeping his fists clenched attracted attention to his condition. At present there is a high degree of spastic diplegia. The adductor-spasm of the thighs is extreme, and causes at times complete crossing of the legs; "clasp-knife rigidity;" spastic contracture in knee-joints; "lead-pipe contraction;" during an attempt to stand the extensors of the foot pull the dorsum up so as to produce pes calcaneus. Leg muscles very thin. No patellar reflex on account of contracture; short foot-clonus. The lower extremities jerk very much when abruptly handled. Muscles of abdomen rigid. Very active tendon-reflexes in

the upper limbs; hands strongly flexed at the wrist and fingers inverted; choreatic and athetoid movements; arms flexed at elbows, but gradual passive extension easy. Speech is profoundly disturbed, but is not entirely unintelligible. There are no spasms of the facial muscles, but the boy has evidently not normal control over them; thus, he could not be induced to frown, to pucker up the eyebrows, or to screw the eyes up tightly, although he appeared desirous of complying. He can inflate his cheeks and draw out the angles of the mouth bilaterally, but could not be made to do so unilaterally, nor could he close each eye separately. He can protrude the tongue, but it and the muscles around the mouth move irregularly during the act. The jaw-jerk is very lively. A tendency to approach the chin to the sternum and turn it to one side is noticeable. Nothing unusual in the formation of the skull. No strabismus, no nystagmus. Sensation normal. The third labor difficult. Child healthy; walked at eleven months; died, when fourteen months old, of "summer-complaint." The fourth, *Amelia*, aged eleven years. Birth difficult. Healthy. Knee jerks exaggerated. Ankle clonus easily elicited. Tendon reflexes of the upper extremities active. Fairly active jaw-jerk.

The fifth child was born dead after difficult labor.

The sixth, *Mabel*, aged seven years. Birth difficult; instruments. Healthy child. Knee-jerk active, but not much exaggerated. Achilles tendon reflex active; reflexes of the upper limbs and the jaw-jerk very evident, but at any rate not much increased.

The seventh labor was very difficult; child died the day after birth. None of the marriages in this family was consanguineous.

We observe, then, in this family the occurrence of spastic paraplegia in a brother and a sister, and of bilateral spastic hemiplegia in their first cousin; in all three cases the affection was remarked in early infancy. In view of the etiology that is so often assigned to such cases, their multiple occurrence in one family is a fact of much interest; for the first two resemble in essential features the congenital spastic rigidity of Little or the paraplegia cerebialis spastica of Heine, and in the causation of this affection the influence of abnormal parturition, difficult labor, premature birth, and asphyxia neonatorum is conspicuous in a large proportion of the cases. This is true in an even higher degree of bilateral spastic hemiplegia. In the literature of the subject it is very often distinctly stated that the kindred of the patient were free from a similar affection and from other nervous disorders; and Rupperecht¹ tells of a woman with congenital spastic rigidity who had a healthy child, and of a man with the same disease who was the father of a healthy boy; in each of these cases the affected parent had been prematurely born. Rupperecht concludes that the disease is not transmitted by inheritance.

It might, therefore, seem that the cause of the disease is external and not inherent; and, if it is always to be regarded as a birth palsy, its occurrence in several children of a family would have to be explained

¹ Volkmann's Collection, No. 198.

by the repeated action of a common cause, such as some condition in the mother unfavorable to normal gestation or labor. This explanation is considered plausible by Schultze,¹ one of the very few authors who have published observations of this kind. He describes three children in the same family with spastic rigidity of the lower extremities; two of them had strabismus; in other respects all three were normal. The parents were healthy; they were not related. Their first child was born without difficulty, and remained well; the three next children are those referred to, and it is stated that they were born at term, but that each time labor lasted three days. There was no physician present; neither forceps nor version was resorted to, and the children appeared to be normal until they attempted to walk. Schultze attributes the spastic condition to some cerebral injury sustained during the protracted labor.

But in a large number of the isolated cases "the disease seems to affect perfectly healthy children without any assignable cause," and "in general it may be said that abnormal labor, though a common cause, is by no means the universal one that some writers would have us believe."² It is doubtful whether in Schultze's cases prolonged labor was really solely responsible for the spastic rigidity in the three children; it is certain, however, that abnormalities of parturition and labor are as inadequate to account for all the instances of multiple occurrence of the disease in a family as for all the isolated cases. Thus, Latimer³ reports two cases of spastic paraplegia in the same family. The patients are a brother and a sister; in addition to the spastic rigidity of the legs the brother shows a slight thickness of speech and involuntary micturition and defecation, while the skin of the sister "seems hypertrophied." Other children in the family are healthy, as is also the mother. *There was no trouble at the birth of either child.* They have never had convulsions. Chronic alcoholism in the father is noted as having been possibly a predisposing cause.

Reviewing our own cases, we find no external cause to which the spastic rigidity of the brother and sister might be attributed; there was nothing abnormal at the birth of either child, and, apart from the affection in question, they are perfectly healthy. But the influence of difficult delivery in producing bilateral spastic hemiplegia in the cousin cannot be ignored. As far as I have been able to ascertain, the coincidence of spastic paraplegia and spastic diplegia in the same family has never been observed before. Were this case of spastic diplegia an isolated one there would be no hesitation in ascribing it solely to the injury sustained by the child during its passage into the world; but

¹ Deutsche med. Wochenschrift, 1889, No. 15.

² Bradford and Lovett: Orthopædic Surgery, 1890, p. 588.

³ Transactions of the American Pædiatric Soc., 1889. Archives of Pædiatrics, Feb., 1890.

considering that in two other children of the family we find a similar disease without this cause, and in two sisters of this patient a similar difficulty of birth without this effect, we are naturally embarrassed in appreciating the factors concerned in the etiology of the disease.

We would certainly not be justified in excluding a family predisposition from our consideration of the etiology. The two mothers and the other children, with the exception of one son, all exhibit more or less increased tendon reflexes. It is open to discussion whether this peculiarity is to be interpreted as a symptom of the disease in its slightest degree or only as an indication of what might be called a spastic diathesis. Anomalies of tendon reactions have been noted as the sole physical peculiarity in individuals some of whose kindred were affected with a family disease of the nervous system; but this anomaly consisted in the *loss* of the knee-jerk in a member of the family in which Bernhard¹ observed several cases of progressive spinal muscular atrophy complicated with bulbar palsy; and the knee-jerk was absent in four (otherwise normal) members of a family in which there were three cases of spastic paraplegia besides other nervous diseases, recorded by Bloch.² On the other hand, it is related in the thesis of Hammer³ that in one family four brothers were affected with progressive muscular dystrophy, a fifth with tabes, while a sixth exhibited only "very active patellar reflexes." We shall meet with this excess of the tendon-reflexes also in the family to be next discussed.

It is worthy of note that spastic rigidity and increased reflexes are found only in the descendants of M.'s first (neurotic) wife, whereas they are absent, as far as could be ascertained, in those of the second.

The spastic diplegia is doubtless due to a morbid process in the cortex, perhaps porencephaly in the Rolandic regions. Concerning the pathology of the two cases of spastic paraplegia it would not be safe to base conclusions on the sections recorded by Förster and by Sachs, there being important clinical differences; and the autopsies have not yet been reported.⁴

CASE III.—The father of the second family, O'Connor, is a tall healthy man, aged thirty-eight years, denies syphilitic infection or addiction to drink. Has never known in his kindred any affection

¹ Virchow's Archiv, Bd. 115, H. 2.

² Kniephänomen und neuropathische Diathese. Arch. f. Psych., xii.

³ Abstract in Neurolog. Centralblatt, 1891.

⁴ Spastic rigidity of the extremities is a conspicuous symptom of the family diseases described by Pelizaeus (Arch. f. Psych., xvi.), Dreschfeld (Med. Times and Gazette, 1878), and more recently by Gee (St. Barth. Hosp. Rep., xxv.). In the cases of Pelizaeus and of Dreschfeld associated symptoms led to the diagnosis of multiple sclerosis; in the family reported by Gee, the father and two children were affected; they, father and elder child, exhibited in addition to the spastic condition atrophy of the intrinsic muscles of the hand. Only abstracts of these articles were accessible.

similar to that observed among his children, nor have nervous disorders of any other kind occurred among them. His reflexes are normal.

The mother is tall and robust, aged thirty-seven years. Has always been well. Kindred negative. Knee-jerk and Achilles tendon reflex quite active; the reflexes of the upper extremities are easily elicited; jaw-jerk lively. No ankle clonus. It is doubtful whether the reflexes of this woman are abnormally increased, but they are certainly much more active than those of her husband. Husband and wife are not related.

Of this union the issue has been eleven children, eight of whom are living. The firstborn died at the age of four years and a half, of diphtheria—had been healthy; the sixth died at the age of one month, cause of death unknown; and the tenth succumbed at six months to a bowel complaint. The surviving children are:

James (Fig. 1), aged sixteen years. Was well until about a year and a half ago; about that time noticed a certain degree of stiffness in the legs,

FIG 1.

FIG 2.

FIG. 3.



especially on rising in the morning. Gradually his present condition developed, but no progressive tendency has been apparent for months. His attitude while standing and during locomotion is that of a comparatively slight degree of spastic paraplegia. The lower extremities are flexed at knees and hips, and the thighs well adducted. The typical peculiarity of the gait is marked. Legs not wasted. Knee-jerks much exaggerated, but no patellar clonus, nor is there ankle clonus, although besides the usual plantar flexion of the foot a thrill may be felt by the hand holding

the foot when the tendo Achillis is tapped. Plantar, cremasteric and abdominal reflexes very lively. Abdominal muscles somewhat rigid. The upper limbs appear perfectly normal; motor power undiminished, use of fingers unimpaired. Reflexes much increased; a tap on the ulna produces contraction of biceps and pectoral muscles; a tap on the acromion causes flexion of forearms. Jaw-jerk well marked.

William (Fig. 2), aged fourteen years. Had been well up to the age of seven and a half years; then his legs began to get stiff, and the walk grew worse. Has been using crutches fully five years. Is rather tall for his age. Contractures in knee-joints, adductor spasm, pes equinus. Knee-jerks very much exaggerated; ankle clonus; plantar and cremasteric reflexes very lively. Cannot stand on the soles of his feet; the tips of the shoes are worn out before the heels show any sign of wear. Upper limbs normal, except that reflexes are increased; contraction of major pectoral when lower end of radius is tapped. Jaw-jerk not very active.

John (Fig. 3), aged thirteen years. Is said to have been well until he had "typho-malarial fever," four years ago. The peculiarity of his walk had been noticed before the illness; after recovery his gait was worse. In 1890 he was admitted to the Children's Hospital, when the following note was made: "Flexed hips, flexed knees, adducted knees, and double equinus. The legs can be put straight by considerable manual force, but the position is painful. The tread is on the toes." August 7, 1890, double achillotomy was done by Dr. Sherman. The boy is now plantigrade, knee-jerks exaggerated; slight ankle clonus. Very active abdominal and cremasteric reflexes. Functions of upper extremities unimpaired, but all the reflexes increased; also the jaw-jerk. This lad walks long distances without fatigue.

There is no diminution of power in the limbs of James and John, and the appellation of spastic paralysis would be inappropriate. In the case of William the contractures interfere sadly with station and locomotion.

Mary, aged eleven years. Healthy, gait normal. Tendon reflexes in upper and lower limbs increased; short foot clonus, active jaw-jerk.

Frank, aged eight years. Parents consider him somewhat stiff in the knees. Gait not evidently spastic, but knees tend to knock. Knee-jerks considerably exaggerated; slight, but evident ankle clonus. Superficial reflexes very active. Abdominal muscles slightly rigid. Tendon reactions in upper limbs lively, but less so than in James. Active jaw-jerk.

Maggie, aged six years. According to parents has habitually a "lazy, dragging walk." Knee-jerks much increased; slight ankle clonus could be elicited, but with difficulty, as the child could not be induced to relax the muscles. Tendon reflexes of upper extremities are present, but not excessive. Jaw-jerk quite active.

Matthew, aged three and a half years. Active knee-jerk and jaw-jerk. The other deep reflexes do not seem to be excessive, but examination is rendered difficult by the behavior of the child.

Annie, aged eight months. Lively knee jerk easily obtained. Began to teethe a short time ago, and is said to have had spasms.¹

At the birth of William, Maggie, and Mary instruments were used, and labor was prolonged; the youngest child was born without the use of instruments, but labor lasted two days and nights; in the other cases delivery was easy. All the children were born at term.

¹ It was subsequently ascertained that this child had died of "water on the brain."

With the exception of the teething spasms of the youngest child there have been no convulsions. Nystagmus, strabismus, disturbances of sensation and of the sphincters are absent. The physical development of the children corresponds to their respective ages. Their intelligence is held in low esteem by the father, who declares them to be, as a rule, "dull and unambitious;" against this judgment, however, maternal fondness protests. Although their attainments do seem to be rather meagre, there is, at any rate, no mental deficiency that could be justly designated as morbid.

The cases of spastic paraplegia in this family present the same general clinical appearance as the two cases in the first one, differing only in the time of onset. Their etiology cannot be detected in any external circumstance, and, although there is no proof of the direct hereditary transmission of a neurotic tendency, the prevalence of excessive tendon reactions in this family affords the same evidence as in the other of a predisposition to this disease.

Tooth¹ describes four brothers with spastic gait, increased reflexes, weakness of the sphincters, and disturbance of speech. These symptoms appeared at the ages of nine and a half, thirteen, and fifteen years. Despite the weakness of the sphincters and the anomaly of speech, Tooth assumes that primary lateral sclerosis is the anatomical basis of the affection, inferring this from the analogy of degeneration of the posterior tracts as the basis of Friedreich's hereditary ataxis. In regard to the disturbance of the sphincters and the difficulty of speech, Tooth's case resembles one of Latimer's, while the objections to the theory of pure lateral sclerosis do not exist in our cases. The observations of Bernhardt² and of Bloch³ show that pure spastic paraplegia may attack several members of a family in adult life, and remain uncomplicated for many years, but that as late as ten years after the onset bulbar symptoms may supervene, which, according to Bernhardt, point to insular sclerosis. Primary lateral sclerosis is suggested by Philip⁴ to be the lesion in a boy who became affected with spastic rigidity of the lower limbs at the age of seven years, and whose father had acquired a similar disease late in life, while three of his brothers had pseudo-hypertrophic paralysis transmitted to them through the mother, among whose relatives this disease existed.

By whatever terms the clinical aspect and the hypothetical pathology of all these cases may be designated, it is evident from the history of the two families here reported and the collated cases that spastic paraplegia may occur as a family disease, due to a congenital tendency, and appearing either in earliest infancy, during childhood, or in adult life. It may be assumed that the complications and the difference in the age of onset correspond to variations in the extent and nature of the morbid process.

¹ St. Barth. Hosp. Rep., xxvii. Abstract in Neurolog. Centralblatt, 1892, No. 8.

² Virchow's Archiv, Band cxxvi., 1891.

³ Loc. cit.

⁴ Brain, viii., 1886.

A CASE OF SYMPHYSIOTOMY.

BY WILLIAM T. LUSK, M.D.,
OF NEW YORK.

HANNAH P., primipara, aged twenty-seven, was admitted to the Emergency Hospital at 9 P.M., January 8, 1893. She had then been in labor about twenty-two hours. From her husband it was learned that she had been attended at her home by a physician since 4 A.M. The latter had unsuccessfully tried to perform version, and about three hours previous to her coming to the hospital he had caused her to be placed under chloroform and had applied forceps.

At the time of her admission the patient was in a somewhat exhausted condition. Her pulse was 130. The labor pains were frequent but cramp-like in character. An examination showed a very œdematous condition of the vulva, a perineum torn through to the rectum, and the anterior vaginal wall badly lacerated. The laceration of the cervix extended above the vaginal junction. On introduction of the catheter a small quantity of bloody urine was withdrawn.

Axis-traction forceps were at first applied to the head, but without success. I was summoned near midnight. At that time the pulse was 150, and feeble. I found a brow presentation. Owing to the firm retraction of the uterus version was impossible. I feared to resort to craniotomy and the cranioclast, as the injuries already inflicted upon the soft parts seemed to preclude a lengthy operation and one always accompanied by contusion. I therefore decided to resort to symphysiotomy, hoping by so doing to correct without violence the faulty presentation. The operation was performed by means of the Harris-Galbiati knife. The separation of the symphysis was accomplished without difficulty. Two assistants were employed to exercise pressure upon the hips to prevent excessive divergence of the pubic bones. As was anticipated, the conversion of the brow into a vertex presentation was easily effected by the hand. Forceps were then applied to the head, and the extraction of the child followed with little delay.

The cut surfaces of the symphysis were then brought together, and the ligaments were sutured with catgut. The wound in the soft parts was stitched with No. 12 silk. A wide strip of adhesive plaster was passed around the hips and fastened across the pubes in front, and a firm bandage was adjusted. The patient rallied fairly well, but about 7 A.M. went into collapse and died at five in the afternoon.

The child was born alive; it weighed nine pounds; the head had been much injured by forceps, and the lower jaw was fractured, apparently from attempts to convert the brow into a face presentation. Death took place at the end of seventeen hours.

No autopsy was permitted in the case of the mother; the bandage and adhesive strap were, however, removed after death, and a careful examination of the pubic wound was made, both externally and *per vaginam*. It can be safely asserted that the symphysiotomy was in no way chargeable with the fatal issue.

REVIEWS.

DISEASES OF THE SKIN. By H. RADCLIFFE CROCKER, M.D., Fellow of the Royal College of Physicians of London, etc. Second edition, revised and enlarged, with ninety-two woodcuts. 8vo. Philadelphia: P. Blakiston, Son & Co., 1893.

WE had the pleasure four or five years ago of reviewing this work, and its gradual but certain attainment of the recognized position of one of the leading text-books on the subject has fully borne out the good opinion then expressed. If this was thought then, we can say now with greater freedom and surer basis that the second edition is a worthy successor to the first. The volume has been enlarged by the addition of about two hundred and fifty pages, and has been subjected to careful revision throughout. In the increased space are, among others, incorporated articles on erythema induratum, hydroa vacciniforme, recurring summer eruptions, pityriasis rubra pilaris, Morvan's disease, Dartr's disease, angioma serpiginosum, angiokeratoma, adenoma sebaceum, phagedæna tropica, seborrhœic dermatitis, actinomycosis, and epidemic exfoliative dermatitis. Among the minor additions may be mentioned follicular disease of the scalp, grouped comedones, plica, and folliculitis decalvans.

The author thinks that we are now warranted in accepting the belief that such diseases as impetigo contagiosa, ecthyma, furuncles, carbuncles, and the pustular element in eczema, are all due to the same pus cocci. To these diseases we would add sycosis, the so-called folliculitis barbæ; and it is apparently, although not distinctly so stated, recognized by Dr. Crocker also, as in this new edition, to his former definition of sycosis, has been added "due to microbic infection."

The subject of alopecia areata which has been much discussed in recent years, comes in for its full share of the enlargement and revision. The author divides these cases into four classes: in the first placing those of universal alopecia; in the second, those with one or more patches in the course of a nerve, or on the site of an injury; in the third, those with small atrophically depressed patches; and in the fourth, those of the common type, in patches or bands of irregular distribution, and with short club-shaped hairs at the borders of the spreading patches. Those of the first two classes the author believes to be tropho-neurotic in origin; the third class, probably so; and the fourth class, which represents ninety-five per cent. of all cases, as parasitic, and of feebly contagious nature. He moreover believes, with Hutchinson, that there is a relationship between this disease and tinea tonsurans; stating that while, in children, the fungus gives rise to the ordinary picture of ringworm, in the adult it produces alopecia areata instead—

for the reason that the hair of the scalp of adolescence and adult age alters its consistence and the fungus is no longer able to penetrate into its substance as it is in children, but passing down between the root-sheaths separates the hair from its nutritive supply, and so leads to atrophy and gradual extrusion. It seems to us that such reasoning is discredited by the fact that the ringworm fungus is capable enough of penetrating the hairs of the beard and leading to their disintegration, as it certainly does in tinea sycosis; and these hairs are, as a rule, in every way essentially stronger than the hairs of the scalp. Moreover, if the ringworm fungus were the cause, this fact should have been long ago disclosed by the investigations and examinations made by many careful observers.

While, however, the author very properly gives his own views, based as they are upon extended and skilled observation, the subjects are all handled with marked liberality, and the opinions of his many *confrères* in dermatological work are freely quoted and given due weight. In fact, it would be difficult to criticise the work unfavorably, for it is an admirable and representative treatise, reflecting much original thought, but encompassing the whole subject of dermatology in its widest sense, and presenting the subject-matter in such a readable, full, yet concise manner, as to be readily comprehended by student or practitioner. It is, indeed, one of those rare books equally valuable to expert and general physician. Dr. Crocker is to be congratulated upon being the author of the leading English text-book on diseases of the skin; and the profession at large is also fortunate in having at its command a work of which every page bears the impress of honesty, thoroughness, and large experience.

H. W. S.

DIE MICRO-ORGANISMEN DER MUNDHÖHLE. DIE ÖRTLICHEN UND ALLGEMEINEN ERKRANKUNGEN WELCHE DURCH DIESELBEN HERVORGERUFEN WERDEN. Von W. D. MILLER, Dr. Med. et Phil., Professor am zahnärztlichen Institut der Universität Berlin. Zweite umgearbeitete und stark erweiterte Auflage.

THE MICRO-ORGANISMS OF THE MOUTH; THE LOCAL AND GENERAL DISEASES CAUSED BY THEM. By W. D. MILLER, M.D., Ph.D., Professor at the Dental Institute of the University of Berlin. Second edition, revised and greatly enlarged. 8vo., pp. xxviii, 448; 134 illustrations and 18 photograms. Leipzig: Georg Thieme, 1892.

It was our agreeable duty to call attention to the first edition of Dr. Miller's excellent work on *The Micro-organisms of the Mouth*, in the AMERICAN JOURNAL for September, 1889. As the general plan of the book is retained, we must refer our readers to the former review for a summary of its scope, pointing out here only such additions as are most striking in the present edition.

Throughout, the book bears evidence of most careful revision by its author, and it has grown, in consequence, to the extent of 150 pages. It is furthermore enriched by the addition of more than 20 new illustrations in the text and by 18 photograms of new species of pathogenic mouth-bacteria, and of the various stages of carious degeneration of

the teeth. These photograms are collected in three plates at the end of the book.

Probably the most notable addition in the present edition is a chapter devoted to the consideration of asepsis and antisepsis in dental surgery. In this the measures of prophylaxis of caries are considered; the treatment of incipient caries by means of germicides; the use of antiseptics in the treatment of cavities, dead teeth, and those whose pulp is undergoing putrefaction; the disinfection of instruments, etc., used in dentistry; the antiseptic action of the various materials made use of in filling teeth; and, finally, the sterilization of teeth about to be implanted. The conclusions reached are based upon a large experience and are confirmed by the results of many carefully conducted experiments, the recital of which would, however, carry us beyond the limits of this review. But we may say in general, that for operations of whatever kind about the mouth the most thorough antisepsis is recommended, and that of the antiseptics in vogue Miller prefers bichloride of mercury and peroxide of hydrogen for most purposes. For the disinfection of carious cavities he advocates the use of iodine trichloride, ascribing to it advantages over all other antiseptics, including sublimate.

In the second part of the book, that devoted to the consideration of the pathogenic bacteria found in the mouth and the diseases caused by them, we find the list of bacteria increased from 13 in the former edition of the book to 31 in the present one, many of them described here in detail for the first time. Here, again, the great importance of careful antisepsis in the surgery of the mouth is urged repeatedly. But perhaps nowhere does it receive such striking emphasis as in a table with which the volume closes. Here Miller has collected from various sources 165 cases in which severe complications have resulted from diseased teeth or have followed dental operations alone, and of these, 63, or somewhat more than 38 per cent., ended fatally.

The author's theory of the causation of dental caries, so elaborately detailed in the first edition, remains practically unaltered in this, being only strengthened by his subsequent researches.

That a new edition of a work so technical and of such limited scope should have been required after so short an interval as three years, is ample evidence of the high esteem in which it is held. It contains many valuable suggestions for the surgeon as well as the dentist, and cannot fail to be of interest to all who are occupied with the various problems connected with the causation and prevention of infectious diseases.

J. S. E.

A TEXT-BOOK OF MORBID HISTOLOGY FOR STUDENTS AND PRACTITIONERS.

By RUPERT BOYCE, M.B., M.R.C.S., Assistant Professor of Pathology in University College, London. 8vo., pp. xxiv., 477; 130 colored illustrations. New York: D. Appleton & Co., 1892.

THE difficulty of conveying a correct conception of pathological histology outside of the laboratory and away from specimens of the various diseased conditions is so great, that much difference of opinion exists as to the best mode of presentation of the subject in a text-book. In the

work before us the author has attempted to supply the requirements of ocular demonstration by a large number of illustrations of the various lesions, and the bulk of his text is devoted to their description and analysis. The work may therefore be regarded as much an atlas as a text-book.

The arrangement of the book and the views contained in it are in accord with the presentation of the subject at University College, and Professor Horsley, to whom the volume is dedicated, has contributed an introductory chapter. In the first chapter are concise directions for hardening, imbedding, cutting, staining, etc., with a description of the microscope and necessary accessory apparatus. Chapters II.-X., inclusive, are devoted to Inflammation, Repair, Degeneration, Neoplasms, and the Infectious Diseases. As a basis for the discussion of inflammation the lung is chosen, as being of simple structure and as affording in its alveoli excellent opportunity for the study of the various exudates. The remaining ten chapters are occupied in the description of the lesions as they occur in the different organs. The work concludes with a bibliography and an index.

We cannot but feel that for text-book illustration, good drawings, made with the assistance of the camera lucida, stippled paper, and the various other aids now at our disposal, are to be preferred to even the best photomicrographs. By neither process is it possible to exactly represent all the details of the very simplest tissue, but the judiciously made drawing selects those of importance, while these are as likely as not to be invisible in the photomicrograph. In the present volume the illustrations appear to be lithographic reproductions of photomicrographs. Many of them illustrate topographical features very well, but the majority are open to the criticism of lacking in detail. They are too small to be really good, are taken, as a rule, with comparatively low powers of the microscope, and, in many, important details are omitted. The illustration of a fibroma, to take an example at random, shows a circular field dotted over with irregular bluish spots without the faintest suggestion of any fibrous structure. Again, the specimens seem to have been stained with nuclear dyes only, and we are accordingly left to imagine the size, shape, and character of the cell body.

We regret to say that the text, too, is disappointing. It is more of the nature of a summary of the various changes than of any description of them. Three coarsely printed pages is certainly inadequate space for the discussion of a subject so fundamentally important as inflammation prior to the description of specimens. There is also throughout the book an unfortunate lack of any philosophical indication of the relation between cause and effect, and no useful generalizations are offered to aid the reader to understand the different phases of the same lesion dependent upon differences in structure of the various organs. These we conceive to be of the most vital importance in the presentation of so complex a subject as pathological anatomy. Without them it is little more than a catalogue of dissociated lesions, while with their aid it quickly reduces to a most logical simplicity. It is largely because of the lack of this aid that the work must be regarded with something of disappointment.

J. S. E.

A MANUAL OF MEDICAL JURISPRUDENCE. By ALFRED SWAINE TAYLOR, M.D., F.R.S. Revised and edited by THOMAS STEVENSON, M.D., of London. Eleventh American edition. Edited, with Citations and Additions, from the twelfth English edition, by CLARK BELL, Esq., President of the American International Medico-Legal Congress of 1893, etc.

THIS work is another gift to Medical Jurisprudence by Mr. Clark Bell. It is a complete revision of all former American and English editions of this standard book. This edition contains a large amount of entirely new matter, many portions of the book having been rewritten by the editor. Many cases and authorities have been cited, and the citations brought down to the latest date.

The book is well printed in clear type, and covers between 700 and 800 pages, containing numerous plates.

The subjects treated of include the following: Medical Evidence; Poisoning; Wounds and Personal Injuries; Asphyxia (and under this head, drowning, hanging, strangulation, suffocation); Lightning and Electricity; Cold; Heat; Starvation; Pregnancy and its Legal Relations; Delivery; Criminal Abortion; Infanticide; Birth; Inheritance; Legitimacy; Paternity; Impotency; Sterility; Rape; Insanity; Life Insurance.

These general heads will give an idea of the scope and extent of the work. The book has so long been a standard treatise on the subject of medical jurisprudence, and has gone through so many editions—twelve English and eleven American—that there is little left to criticise, unless it is to note the admirable manner in which Mr. Clark Bell, in editing this edition, has enlarged and improved what already seemed complete, by bringing his many citations of cases down to date to meet the present law; and by adding much new matter he has furnished the medical profession and the bar with a valuable book of reference, one to be relied upon in daily practice, and quite up to the present needs, owing to its exhaustive character. The object of a work on this subject seems to be to bring within a small area matters which concern the duties of the educated physician and surgeon and which demand careful inquiry. A medical jurist should have a practical knowledge of all branches of his profession, and should be able to explain any medico-legal question which may arise. He knows not at what time he may be served with a subpoena to appear at court and testify to certain facts and to be asked his opinion as an expert in regard to questions arising from the commission of crimes of various kinds. For example, from the appearance of blood-stains, was the murder or assault committed yesterday or a week ago? was the wound made by a sharp or blunt instrument? did the deceased fall or was he struck on the head by another; or what was the cause of death?—thus enabling the judge to place the subject in an intelligible light before the jury, and assisting the jury in arriving at a just verdict. So, too, the lawyer and judge may study such a book to their advantage, in order to familiarize themselves with such matters—the judge for charging the jury, the lawyer for conducting his examination and cross-examination in criminal cases. For these reasons it would seem that the book is indispensable to the library of both physician and lawyer, and particularly the legal practitioner whose duties take him into the criminal courts.

Under the first general head, "Medical Evidence," medical and medico-legal duties are described.

The reader's attention is called to the value of notes taken in medico-legal investigations for use in court, and the care required in making medico-legal reports.

The editor gives some fifteen rules as to the admissibility and inadmissibility of dying declarations, and adds numerous citations of late American cases to support them.

In treating of the subject, "Trial at Assizes," the distinction is shown, that in England a witness is bound to obey a subpoena when reasonable expenses are tendered him, whereas in the United States every citizen is bound to obey such calls, and the accused is entitled to compulsory process, without prepayment of fees.

The question of "confidential communications" is discussed, there being a wide difference of opinion between the views of English common-law jurists and the legal and medical profession in many of the American States. On this subject quotations are made from the New York statutes, and from the code of civil procedure of New York and amendments thereto, as to communications of this nature and the ability to testify as to them.

The editor notes that the courts of our country are disinclined to allow medical works to be read in evidence, as they tend to confuse and mislead juries.

Under the important head of Experts, Expert Testimony, and Opinion Evidence, the editor has made a most valuable addition to the work, and the new decisions are numerous, applicable, and accurate; this is also true in the treatment of the subject of Insanity, and as to who are competent to testify as experts in cases involving this question.

The other heads under Medical Evidence are: Coroners' Inquests; Examination; Cross examination; Re-examination; Presence in Court of Scientific Witnesses; License of Counsel; Rules for Delivery of Evidence; Fees.

Signs or Indications of Death: cessation of circulation and respiration; cooling of the body; cadaveric rigidity; rigor mortis; putrefaction mistaken for gangrene.

Under "Poisoning" we notice a division of the subject into Corrosive and Irritant Poisons; Metallic Irritants; Vegetable and other Irritants; Neurotic Poisons.

The work includes Gaseous Poisons generally, and refers to death and other results arising therefrom, when subjected to other influence, such as carbonic acid, charcoal vapor, carbonic oxide, coal and coke vapor, sulphurous acid, vapors of lime, cement and brick kilns, confined air, coal gas, water gas, carburetted hydrogen, nitrous oxide, sulphuretted hydrogen, effluvia of drains and sewers.

The treatment of the subject of Wounds and Personal Injuries is exhaustive and includes many plates. And in comparing the blood of man with that of animals, the editor has noted Prof. Reese's statements as to this, and those of Marshall D. Ewell and Dr. Formad, of Philadelphia, and gives the substance of a paper by himself, in a discussion of the subject before the Medico-Legal Society of New York, on "Blood and Blood-Stains," in May, 1892.

Under Malpractice, both the negligent and ignorant offence, the latest American decisions are given to support the rules laid down. The

editor notes that the weight of authority seems to decide that all which the law requires of physicians or surgeons is ordinary care, skill, and diligence in the practice of their profession, as other practitioners employ in their line and in that locality, and the burden of proof is on the plaintiff in an action for malpractice to show the want of care, diligence, and skill. In Pennsylvania, however, the courts have held that such skill was required "as thoroughly educated surgeons ordinarily employ," but the general rule seems to be as first stated.

The other subjects comprising the work have already been mentioned. Too much praise cannot be given to the editor for his thorough and painstaking labors, by which he has given to two professions a reference-book to be relied upon.

P. W. M.

HUMAN EMBRYOLOGY. By CHARLES SEDGWICK MINOT, Professor of Histology and Embryology in Harvard University Medical School. 8vo., pp. 800, with 463 engravings. New York: Wm. Wood & Co., 1892.

UPON reading the characteristic preface to this valuable work, one is impressed by the opening sentence, which says that "the following attempt to present a comprehensive summary of embryology, as it bears upon the problems of human development, is the result of ten years' labor." Before going very far into the work itself, one becomes convinced of the success of the "attempt," as well as of the vast amount of labor done in those ten years.

The introduction deals with the histology and physiology of the uterus, and with the general outline of human development. The phenomena of menstruation are clearly set forth, and Williams's view of the throwing off of the entire uterine mucous membrane at each period, is regarded as based upon erroneous observations and interpretations. Professor Minot is convinced that only the superficial layers (epithelium) are lost. Then follows a detailed description of the changes in the decidua during pregnancy, at parturition, and post-partum, numerous original drawings being introduced to illustrate statements made; and the conclusion is drawn "that the gravid uterus is passing through the menstrual cycle prolonged and intensified. The function of gestation is a direct modification of the function of menstruation, and the two are physiologically homologous."

The book is divided into five parts, namely: "The Genital Products," "The Germ-layers," "The Embryo," "The Fœtal Appendages," and "The Fœtus." Part first explains the structure and development of the spermatozoa (from spermatoblasts, and these from the parent cells), and also of the ova, together with their maturation. The site of impregnation in man is probably the same as in other mammals; that is, in the Fallopian tube, about one-half or one-third of the way from the fimbriated extremity. It takes the ovum eight days to reach the uterine cavity. "Theory of Sex," and "Heredity" are next discussed, the summary of the latter section being: "The child is like the parents, because its organization is regulated by not merely similar, but by some of the same chromatin as that of the parents." This is so, because the characteristic of the nucleus, chromatin, perpetuates itself

and the nucleus, as first pointed out by Oscar Hertwig, is the organ of hereditary transmission.

In the second part the various theories of the mesoderm are given, and the author expresses his approval of the "germ band theory" of Hatschek. Attention is drawn to the good that the parablast theory of His, although no longer tenable, did in first distinguishing the two primary groups of mesodermal tissues, for which the newer and clearer terms, mesothelium (lining of the primitive body cavity) and mesenchyme (embryonic connective tissue), are preferred.

An interesting feature of the part on "The Fœtus" is a series of drawings of young embryos, most of them from the author's own collection. Both this and the preceding portion (Fœtal Appendages) are especially complete and full.

The historical sketch at the end of many of the chapters makes the book of increased value to students of embryology as well as to others. It is possible to gain an approximate idea of the amount of work this volume represents by considering the fact that the reference list, comprising only such articles as were actually referred to in the course of the book, covers thirteen pages. The illustrations throughout are as clear and excellent as they are numerous.

M. W.

THE MODERN ANTIPYRETICS: THEIR ACTION IN HEALTH AND DISEASE.

BY ISAAC OTT, M.D., Former Lecturer on Experimental Physiology in the University of Pennsylvania, etc. Second edition. Pp. iv, 125. Easton, Pa.: E. D. Vogel, 1892.

THE author is to be congratulated in that he has produced a thoroughly scientific monograph, and yet ever so practical in its teachings that a second edition has been called for. Commencing with the subject of heat, he describes his calorimeter, which he shows to be an instrument of precision. In a review of the literature he proves that the thermotaxic centres are distributed in the fore-, inter-, and after-brain and in the spinal cord, and a careful study of the facts, results of experimentation, and of clinical observations, shows that a revision of their functions is necessary, which he has presented in tabular form. The fevers of albumoses and peptones, septic from putrid blood, of malarial origin, receive careful consideration. The mode of action of antipyretics in health and fever is illustrated by tracings, and the chemical relationship of pyridine, quinoline, kairin, and thallin is clearly demonstrated. The questions of deep interest for the practising physician are fully set forth, and the latest data given. The general statement that antiseptic properties predominate in the alcohol hydrate derivatives, as in naphthol, while the antithermic properties are more prominent in the amidogen derivatives, thallin and kairin, and a predominance of analgesic properties exists in the amidogen compounds, in which an atom of hydrogen has been substituted by a molecule of a fatty radical, especially of methyl, as in antipyrine, phenacetine, and exalgine, is the text from which he deduces a sermon well worthy of careful study. In this

section we recognize many new aspirants for professional favor, showing that the more recent acquisitions have received attention. Quoting Sihler, he gives a brief but satisfactory exposition of the method of Brand in typhoid fever. In this disease, the author states that the difference between antipyretics and the cold-water treatment is that "the former decreases heat-production, the latter increases it; the one permits the source of thermogenesis to go on actively, the other represses it; the one favors the flame, the other smothers it." As one studies the newer antipyretics in the light of the information presented by this little book, he will certainly form a truer estimate of their value. R. W. W.

MEDICAL MICROSCOPY: A GUIDE TO THE USE OF THE MICROSCOPE IN MEDICAL PRACTICE. By FRANK J. WETHERED, M.D. (Lond.), Member of the Royal College of Physicians; Medical Registrar to the Middlesex Hospital, and Demonstrator of Practical Medicine to the Middlesex Hospital Medical School; late Assistant Physician to the City of London Hospital for Diseases of the Chest, Victoria Park. With illustrations. Philadelphia: P. Blakiston, Son & Co., 1892.

In this work we have an excellent collection and arrangement of the material pertaining to medical microscopy—material that hitherto has been distributed under various headings. The first twelve chapters are devoted to the microscope and microscopical technique—matters that we have been accustomed to see in works on microscopy and histology. The author in his selection of microscopical methods has shown his ability to choose only the best, and the articles on Imbedding, Section-cutting, Staining, Mounting, etc., contain methods that are reliable, and the directions are very clearly expressed. A chapter on the examination of tumors follows, which, perhaps, might have been left out of the work. The rest of the book contains most excellent and accurate information on the examination of urinary deposits, feces, sputum, vomit, and blood. The examination for tubercle bacilli receives good attention, and the manner of proceeding in the different methods of staining is very explicitly given; exception might, perhaps, be taken to the recommendation of only two minutes' immersion in the heated stain in the Neelsen (Ziehl) method; the ordinary rule of at least five minutes, is, in our opinion, better. The discharges from cavities and the genital organs are also carefully considered, and at the end of the volume is a concise and excellent *résumé* of the various bacteriological methods employed in bacteriological investigations. The book can be recommended to those who desire to become acquainted with the latest and best knowledge on clinical microscopy. E. L. V.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL
AND HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

RESORCIN IN CHRONIC GASTRITIS.

DR. W. H. THOMPSON makes a very careful report of the results of the use of this remedy in seventy-eight patients selected from his private practice. Of these cases, the failures numbered twenty-one; the successes were fifty-one, and he was doubtful concerning the remaining six. On reviewing his failures, they seemed to present one general characteristic in common, namely, that the gastric disturbance was in them consecutive to nervous disorder. In all histories with such a sequence, resorcin did not seem to have any effect one way or the other. Of the doubtful cases, four proved to be cases of stomach disorder dependent upon gall-stones. It is probable that so long as hepatic irritation continues, the subacute gastritis will continue, whatever be the treatment. Another case, that of a young married lady, with dyspepsia and causeless mental depression, often reported marked improvement and then the reverse. The last of the doubtful cases was that of a gentleman who finally developed ataxic symptoms. Of the successful cases, seventeen presented symptoms of gastric ulceration, the remainder showing only symptoms of gastritis. In cases of severe megrim the remedy had no effect in relieving the attacks themselves, but it had an undoubted effect, fully appreciated by the patients, of preventing the attacks. The element of intermittency which so fundamentally separates functional nervous disease from organic nervous disease, points strongly to a toxic origin, or to auto-infection, as the main factor in functional neuroses; the observation of the benefit of an antiseptic like resorcin tending to support this view. Resorcin, which is now chiefly obtained from benzol, is readily soluble in water, alcohol, ether, and oils, but not in chloroform. It is not irritating to the stomach, and is never "tasted" again by eructation. Except when combined with strong tinctures—then doubtless from the intolerance of alcohol

which goes with gastritis of any form—it does not “repeat” by having its taste returned from the stomach. It should be given in solution, as the powder is locally irritant, in an average dose of five grains one hour after meals. A dose of ten grains often causes dizziness.—*Merck's Bulletin*, 1893, No. 1, p. 8.

PAPOID DIGESTION.

DR. R. H. CHITTENDEN has made a thorough study of this interesting substance, and believes that from his experiments the following conclusions may be drawn:

1. That papoid is a true, soluble, digestive ferment or mixture of ferments, of vegetable origin.
2. That it has marked proteolytic action in acid, alkaline, and neutral solutions and in the presence of many chemicals, antiseptics, and therapeutic agents.
3. That it has a peculiar softening and disintegrating action on proteids, and that its general proteolytic action is that of a genuine digestive ferment, similar to the ferments of animal origin.
4. That it has a certain amount of amylolytic or starch-dissolving power.
5. That it has a marked rennet-like action upon milk, and a pronounced digestive action upon milk-casein.
6. That it exerts its peculiar digestive power at a wide range of temperatures.
7. That the ordinary conditions of health and disease in the stomach and intestine are not liable to check its action, while certain possible conditions may accelerate it.—*Transactions of the Connecticut Academy of Arts and Sciences*, 1892, vol. ix.

THE TREATMENT OF CARDIAC DROPSY.

DR. R. LÉPINE regards the removal of an intercurrent pleuritic effusion as presenting obvious advantages, simple tapping being often sufficient to bring about an improvement in the cardiac condition. For the œdema of the feet and lower limbs, Southey's tubes are satisfactory, being kept in place by collodion or strips of plaster, the part being dusted with iodoform and covered with a bandage. Venesection, even, may be advisable. Digitalin in solution in alcohol, and in fairly large doses, produces beneficial effects. Although he has used caffeine in large doses for some years with good results—very marked in some cases—it was not until he made use of it by subcutaneous injection that he obtained the best results. In order to produce free diuresis it must exert its action suddenly and rapidly. By this method a larger dose can be introduced into the circulation, and it is more rapidly eliminated.—*The Medical Week*, 1893, No. 7, p. 73.

PIPERAZINE IN THE TREATMENT OF STONE IN THE KIDNEY.

DR. DAVID D. STEWART reports three cases in his usually careful manner. The urate of piperazine, which is said to be a neutral salt, is seven times more soluble than is the corresponding salt of lithium. Despite the affinity of this remedy for uric acid, and the extreme solubility of its urate, little can be expected from it in uratic chronic multiple arthritic enlargements, at least in the doses generally administered—fifteen grains daily. In much larger amounts, such as a drachm or two daily, exhibited over a continuous time,

more promising results may be anticipated; whether, however, such doses will be tolerated without injury, is yet to be determined. The present unfortunately high price of the drug prevents the determination of the question. In the first case, gravel, which had been a persistent and troublesome symptom for months, permanently disappeared. The second case, which was one of undoubted pyelitis, the pus has almost entirely disappeared from the urine, being only ascertained by microscopic examination. In the third case, that of probable mulberry calculus, no benefit has been obtained—which fact is in accordance with what might be anticipated from the behavior of this remedy with this salt of calcium, upon which it has no solvent action. The precise mode of action of piperazine is still obscure, although it is certain that it is beneficial in cases of gravel and stone.—*The Therapeutic Gazette*, 1893, No. 1, p. 19.

THE RELATIVE VALUE OF THE SEVERAL SUBSTANCES RECOMMENDED AS ANTIDOTES TO PHOSPHORUS.

DR. E. Q. THORNTON, from his experiments in the laboratory, concludes that permanganate of potassium is the best antidote. It must be used before the poison has become absorbed, and must be well diluted (one-half to one per cent. solution), or vomiting will result before the chemical reaction has taken place in the stomach. It must be given in excess, as considerable permanganate is reduced by the organic substances in the stomach. While sulphate of copper and phosphorus are chemically incompatible, and reaction occurs instantly when they are brought into contact, they decidedly complicate a case of phosphorus-poisoning by causing severe gastro-enteritis. Any substance intended to act as a chemical antidote in the stomach must be given in excess, so that it may come in contact with all the poisonous material; but with sulphate of copper, whether given in excess or in the same chemical proportions required to make the change, violent gastro-intestinal inflammation results. In all cases of phosphorus-poisoning in which sulphate of copper was used as an antidote, death resulted; although the animal to which sulphate of copper alone was given, recovered, decided gastro-enteritis resulted. The animal to which the solution of peroxide of hydrogen was administered, recovered after poisoning by phosphorus. Unchanged phosphorus was vomited and passed by the bowels by this animal, and severe gastro-enteritis resulted. Peroxide of hydrogen is too slow in oxidizing the phosphorus, and too irritating upon the digestive tract to be a valuable antidote. Old French oil of turpentine, which is acid in reaction, is said to form with phosphorus a crystalline, spermaceti-like wax, which has been called "turpentine phosphoric acid." The ordinary oil of turpentine does not bring about this change, and inasmuch as the old French oil of turpentine cannot be obtained in this market, it should cease to be considered as a practical antidote.—*The Therapeutic Gazette*, 1893, No. 1, p. 8.

CANTHARIDES IN THE TREATMENT OF CHRONIC NEPHRITIS.

DR. H. HUCHARD, quoting Lancereaux, believes that this remedy affects directly the epithelial lesion of the kidney, and should be considered as a valuable remedy in the treatment of chronic nephritis. He has not used it

in the acute phase of nephritis, regarding the disappearance of the febrile condition and the onset of œdema, anasarca, and the dropsies to indicate the time for the commencement of the use of this remedy. He employs the tincture in daily doses of from six to twelve drops, believing that those of thirty, fifty, and even sixty drops, are certainly too large. It is best exhibited in emulsion. Two cases are reported in illustration of his belief in the value of this remedy. It is not necessary to multiply observations before rejecting, *a priori*, a remedy whose excellent effects have been demonstrated by reliable clinicians.—*Revue gén. de Clinique et de Thérapeutique*, 1893, No. 5, p. 68.

CHLORALOSE.

MM. M. HANRIOT and CH. RICHET have studied the physiological action of this new remedy. This substance is the result of the action of chloral anhydride upon glyose; it is crystallizable, soluble in boiling water, and on cooling deposits crystals. It can be administered, sufficiently diluted, in milk. It is very bitter and disagreeable, and leaves a nauseous after-taste if given in an aqueous solution. If administered to dogs it produces somnolence, a noticeable reflex and psychical excitability, but without slowing the respiration or heart, which retains its force, and when the sleep is profound the reflexes are all preserved. Their motor power is not lost, although they do not react to excitations, which, in a normal animal, are painful. Observations upon man show that this substance is a certain hypnotic. It can be exhibited in wafers, in dose from six to ten grains; and, in one instance, twenty-two grains produced no other effect than a prolonged sleep. The average dose is between six and seven grains, but it is better to commence with a smaller one.

M. L. LANDOUZY has used this drug during the past eight months as a soporific, always on patients without fever, without appreciable organic visceral lesions, neurasthenics of different degrees, with whom remedies of this class, even in large doses, have failed. In eleven cases, of thirteen, sleep resulted, generally of several hours' duration, restful, calm, and of agreeable awakening; sometimes it is followed by an unpleasant awakening, heaviness of the head, headache, vertigo, emptiness of the head, inappetence, slight malaise, which has persisted an hour after awakening. With two patients these symptoms were more serious, and accompanied by a desire to vomit, coldness of the extremities, cardiac oppression, tendency to fainting, and palpitation. A single dose of five grains, given an hour and a half after eating, may be repeated at the expiration of two hours. He believes this remedy to be superior to chloral, and in smaller dose, the head symptoms have appeared to be less than with the latter drug.

M. P. MARIE records his observations in eleven cases of insomnia, claiming good results. In insomnia of alcoholic origin his successes were not equal to those from morphine, two cases only being cited.

M. R. MOUTARD-MARTIN states that the sleep is soon obtained, is light, and the awakening without the heaviness which is often experienced from chloral. There is no constipation, nor any unfavorable effect upon the stomach, and the appetite may even be increased. From a study of eight cases he concludes: 1. That it is an efficient hypnotic in doses of from five to ten grains.

2. That the preferable method of administration is in a cachet of six grains one hour before sleep is desired, and the second at the first moment of awakening. 3. That the sleep is a calm, dreamless one. 4. That a dose of six grains is followed by sleep within a half to one hour. 5. That the awakening is complete, and without heaviness of the head. 6. That after several days' successful use of this remedy, during from two to four days of intermission of it one observes a sleep not so good as with it, but better than before its administration.

M. CH. SÉGARD has experimented with this drug in six instances: neurasthenia, cardiac disease, arterio-sclerosis, cervico-brachial neuralgia, gout, and paralysis agitans, and concludes that, although it has no analgesic action, it is a reliable hypnotic, even in small doses.—*Comptes-rendus hebdomadaires de la Société de Biologie*, 1893, No. 2, p. 1.

THE TREATMENT OF INTERMITTENT FEVER BY THE METHOD OF BOUDIN.

DR. DU CAZAL recognizes the fact that the treatment of this fever, by arsenic, is by no means novel, but the treatment of Boudin is not the treatment by arsenic, but by arsenic administered in a certain way. Arsenious acid is dissolved in water in the proportion of one to one thousand. Advantage is taken of the tolerance of arsenic at the outset and an amount of this solution is given, each day, equivalent to nearly one grain of arsenious acid, and this amount is continued daily until symptoms of intolerance appear—nausea, colic, sometimes even vomiting and a slight diarrhœa. The daily amount is so divided that it is taken in equal portions every quarter of an hour, from six or seven in the morning until seven or eight o'clock in the evening, in two or three spoonfuls of water or milk. The patient, also, must be well nourished. The writer would add a third requisite—that the administration of the remedy must be entrusted only to a person who will religiously follow the directions as to time and amount. At the end of from three to five days the symptoms of intolerance appear; then it is necessary to lengthen the interval between the doses, but not to suddenly stop the remedy. The interval of administration being doubled, again the symptoms of intolerance will appear at the end of forty-eight to seventy-two hours. Again the interval is doubled, and the remedy is continued for from eight to ten days. Relapses are not only rare, but even exceptional.—*Revue générale de Clinique et de Thérapie*, 1893, No. 2, p. 17.

THE PHYSIOLOGICAL ACTION OF CHLOROFORM.

DRS. W. H. GASKELL and L. E. SHORE, on looking over the curves of the second Hyderabad Chloroform Commission, find that it is evident that this Commission did not supply any answer to the most important question connected with the action of chloroform, namely: What occurs when a large dose of chloroform is administered? The object of their investigation was to determine: 1. The primary effect of chloroform; and 2. The ultimate effect of a large dose on the vasomotor centre, and on the heart, respectively. They believe that the fall of blood-pressure caused by administration of chloroform is one primarily due to a weakening of the heart's action, and not to a paralysis

of the vasomotor centre. On the contrary, the primary effect of blood containing chloroform vapor on the vasomotor centre is over-excitation, causing thereby a marked rise of blood-pressure, and it is only after an excessive dose has been given that there is any evidence of any paralysis of this centre. The general conclusions are that the dangers of chloroform administration are: 1. Of causing a serious fall of pressure, owing to weakening of the heart from too great a percentage of chloroform in the air, which, combined with the action of chloroform on the respiratory centre, in its turn causes failure of respiration; and 2. Cessation of respiration after long administration, owing to keeping on the chloroform, although given with plenty of air, too long a time after complete anæsthesia has been established.—*British Medical Journal*, 1893, Nos. 1673, p. 105; 1674, p. 164; 1675, p. 222.

HÄMOL AND HÄMOGALLOL.

DR. A. GRÜNFELD has made a careful study of these two new preparations of iron. Quoting Busch, who found the iron contained in the urine to be increased to 150 per cent., he believes that hämogallol is a remarkably valuable iron preparation for absorption. These remedies are best prescribed diluted with four parts of white sugar, of which the dose is a teaspoonful of the dry powder upon the tongue with a swallow of water afterward, or seven or eight grains in starch wafers, taken at meal times. The price has been reduced, so that at the present time these remedies are within the means of patients.—*Deutsche med. Wochenschrift*, 1893, No. 3, S. 70.

THE ACTION OF CHLOROFORM AND ETHER UPON THE VASCULAR SYSTEM.

DR. JOHN A. MACWILLIAM has performed some laboratory experiments upon cats (a known quantity of the anæsthetic being carried into the lungs by artificial respiration), and in the tracings shown the chief points to be noticed are: 1. The evidences of enfeeblement and dilatation manifested in the heart under the influence of chloroform, these changes frequently beginning even before the conjunctival reflex was abolished, and when the fall of blood-pressure was not greater, and often not so great, as during chloroform anæsthesia brought on in the usual way. The state of the blood-pressure and the conjunctival reflex controvert the idea that an excessive dose of chloroform was present in the circulation. It is especially to be borne in mind, also, that the chloroform was not given in too concentrated a form, but freely mixed with air to quite as great a degree as when the anæsthetic is given by inhalation in the ordinary way. The depressing changes in the heart are of the same nature as those which can be seen in the heart at a deeper stage of anæsthesia, and they are quite in harmony with what is seen when the chest is suddenly opened and the heart exposed in an animal brought deeply under the influence of chloroform in the usual way—by inhalation. Moreover, they accord with the evidence supplied by the sudden occurrence of death, clearly due to cardiac failure, and not remediable by means adapted to meet a failure in the respiration and in the peripheral resistance in the vascular system. While the force and tone of the heart are

depressed by chloroform, there is no great change in the rhythm. The heart is beating rapidly in these experiments; the medullary cardiac inhibitory centre is paralyzed by the anæsthetic. 2. The contrast between the effects of ether and chloroform upon the heart when the respective anæsthetics are administered, freely diluted with air, in such an amount as to cause abolition of the conjunctival reflex. The conditions of experimentation were precisely the same in the two cases, when ether and when chloroform were given, except that the former anæsthetic was given much more freely than the latter. Under chloroform the blood-pressure falls, and there is a diminution in the force of the beats and the occurrence of marked dilatation of the auricle and ventricle. Under ether the blood-pressure became lowered, but the action of the heart showed no great change; the ventricular beat apparently increased somewhat in force; there was also a very brief, slight and unimportant phase of expansion [dilatation].—*The Journal of Physiology*, 1892, vol. xiii. p. 860.

THE TREATMENT OF CHLOROFORM COLLAPSE.

DR. B. W. RICHARDSON recommends, as important, artificial respiration accomplished by the double-acting bellows, inserting the exit tube into the nostril and emptying the lung, then gently inflate, and next empty and fill, in alternate stroke. Galvanism has been used (1) to excite and sustain respiration; (2) to excite and sustain the heart and respiration; (3) to excite the heart while the respiratory process was sustained by artificial respiration. Yet, as he cannot see how to use electrical excitation with advantage and on a known principle, he believes it to be unreasonable to recommend galvanic action as a means of resuscitation. Antidotal measures he believes to be hardly applicable to chloroform. Inversion of the body is most promising in collapse in the first stage, when syncopal apnœa is the mode of death. The injection of peroxide of hydrogen solutions into the peritoneal cavity, oxygen being liberated into the peritoneal sac, should result in a direct vivifying action of oxygen upon the diaphragm, and a direct absorption of oxygen into the blood, with revival of the contraction of the right auricle and ventricle. This, however, in experiments upon animals, failed, because the oxygen entered the venous system, changing venous blood into arterial, with separation of the oxygen in the free state in the form of bubbles, which would not pass through the capillaries of the lungs; death consequently took place in the same way as when air is injected into a vein.—*The Asclepiad*, 1892, No. 36, p. 337.

POISONING BY CHLOROFORM.

DR. A. B. MARFAN reports the case of a man, forty-nine years old, who drank about two ounces of chloroform. He experienced acute epigastric pain, and slept for twelve hours; then vomited almost clear blood. On attempting to take food, it was immediately vomited, mixed with blood. Five days after, he entered the Necker Hospital, when a most striking jaundiced color of skin and conjunctivæ was remarked. There was marked tympanites, enormous liver, slight enlargement of the spleen. The stools were colorless, but mixed with a small quantity of black blood. The heart-

beats were feeble; pulse 68, small and soft; the temperature normal. The urine was albuminous and contained bile. An absolute milk diet was ordered, and bicarbonate of soda in large doses, with β -naphthol to combat the ulceration of the stomach, and to obtain gastro-intestinal antiseptis. After fourteen days he became convalescent, and recovered perfectly.—*Le Mercredi Médical*, 1892, No. 50, p. 593.

THE PROTECTIVE INOCULATION OF MEN AGAINST ASIATIC CHOLERA.

DR. G. KLEMPERER has reviewed the important work done in the way of the determination of the methods by which immunity against cholera can be obtained. The protective influence of subcutaneous injection of the cholera bacillus culture, of the blood-serum of immunized animals, of the milk of immunized animals, has received careful attention. Noting the possibilities of error when the results of researches upon animals are to be considered as applicable to man, he believes that it is probable that subcutaneous injection of cultures, increasing their virulence, can, in the person inoculated, develop a certain protective power of the blood-serum. In determining how great this protection must be—the quantitative estimation—the observations of Lazarus are in point, who, making use of the blood-serum of persons who had been cured of cholera, rendered guinea-pigs immune against intoxication with the comma bacilli. The quantity required varied from about one-sixth of a drop to seven drops, when used for guinea-pigs. The author has sought to render men immune (1) by subcutaneous injection of virulent cultures; (2) by introducing warmed cultures into the stomach; (3) by injection of the milk of immunized goats. The first method showed by experiment that the blood-serum of the subject had acquired anti-toxic properties to a marked degree, even more than that of the patients who had recovered from mild cholera, so that it is probable that the subject is protected against cholera infection. In the second method he showed that here, also, the anti-toxic properties of the blood-serum of the subject had distinctly increased; but the effect was less than in the use of the first method. In the third method, practised upon man, a drachm of the milk of an immunized goat injected resulted in such a degree of protection that four drops of his blood-serum rendered guinea-pigs proof against cholera.—*Berliner klin. Wochenschrift*, 1892, No. 50, S. 1265.

AGATHIN.

DR. ILBERG has employed this remedy in several cases, following the recommendation of Rosenbaum, that it was valuable in "neuritis and in rheumatic affections of muscles, joints, and tendons." The doses ranged from seven to fifteen grains, three times daily. After about twelve hours the urine became light-brown in color—seldom dark-green, similar to that from the absorption of carbolic acid—which persisted for twenty-four hours after the stopping of the remedy. The cases were supra-orbital neuralgia, sciatica, tabes dorsalis, acute and chronic articular rheumatism, and so-called gonorrhœal rheumatism. The neuralgic and tabetic patients took the remedy without result, excepting one who suffered from sciatica, who was relieved of

pain. The acute and the gonorrhœal rheumatics were not benefited. The chronic rheumatics showed a slight improvement, but hardly more than could have been expected from fourteen days' remaining in bed. The majority of patients complained of headache, particularly in the evening, and feeling of pressure in head. Other symptoms were: insomnia, vomiting, diarrhœa, *ardor urinæ*, feeling of heat, increased thirst, and the patient with gonorrhœal rheumatism experienced increased pain. It does not seem likely that agathin will be chosen as an anti-neuralgic and anti-rheumatic.—*Deutsche med. Wochenschrift*, 1893, No. 5, S. 119.

MEDICINE.

UNDER THE CHARGE OF

W. PASTEUR, M.D. LOND., F.R.C.P.,

ASSISTANT PHYSICIAN TO THE MIDDLESEX HOSPITAL; PHYSICIAN TO THE NORTHEASTERN
HOSPITAL FOR CHILDREN;

AND

SOLOMON SOLIS-COHEN, A.M., M.D.,

PROFESSOR OF CLINICAL MEDICINE AND APPLIED THERAPEUTICS IN THE PHILADELPHIA
POLYCLINIC; PHYSICIAN TO THE PHILADELPHIA HOSPITAL.

THE BLOOD IN CASES OF PHOSPHORUS-POISONING.

V. JAKSCH (*Deutsche med. Wochenschrift*, 1893, No. 1, p. 10) reports two cases of phosphorus-poisoning, in both of which the number of red blood-corpuscles was increased; in one the number of colorless corpuscles remained normal; in the other, which was complicated by an inflammatory condition, the number was increased. It was further found that the proportion of albumin in the circulating blood was normal in both cases; neither were changes demonstrable in the morphological elements of the blood. The specific gravity of the blood was normal, but the alkalinity was considerably diminished.

HEPATIC CIRRHOSIS IN A BOY OF NINE.

BROWN (*Archives of Pediatrics*, x. 1, p. 48) has reported the case of a boy, nine years and nine months old, of healthy German parentage, who was seized with pain in the head, back, and abdomen; tympanites, epistaxis, and irregular elevation of temperature. Considerable improvement took place; but a short time later face, legs, and abdomen became swollen, and subsequently slight jaundice appeared for a few days. The urine was high-colored and passed in small amount, but was not albuminous. The bowels were constipated. Cathartics and diuretics gave rise to copious stools and increased diuresis and vomiting, but the ascites became so threatening as to necessitate thoracentesis, which had to be repeated several times, consider-

able quantities of fluid being evacuated. Throughout, the appetite continued enormous. There was a continued febrile movement, with morning remissions. Later, intense jaundice developed, and amid the symptoms of intoxication the boy died. Though not strong, he had never previously been seriously ill. He had always been an inordinate eater, though his food had not been particularly rich or varied. He had grown rapidly and was five feet in height, although his parents were rather undersized. He had drunk a little beer occasionally, but no alcohol in any other form. From early childhood he had suffered from bilious attacks, attended with diarrhœa and vomiting. At the post-mortem examination the body was found much emaciated. The abdomen was much distended, and presented on its surface veins of considerable size. The skin was deeply jaundiced. The abdominal cavity contained five and a half quarts of clear yellow serum. The liver was of greenish-yellow color and reduced to about half of its normal size; it was rough and nodular and cut with considerable resistance. The spleen was enlarged and deeply congested. The mucous membrane of the stomach was somewhat thickened. The kidneys were yellowish in color, congested, and rather larger than normal.

MYELITIS AFTER GONORRHEA.

LEYDEN (*Zeitschrift für klin. Medicin*, xxi. 5, 6, p. 607) has reported the case of a man, twenty-seven years old, who, while engaged in carrying stone had been exposed to cold. He had been married for several years, and denied syphilitic infection. He had had influenza some fifteen months previously, and had partaken immoderately of alcohol. One night, on retiring, his attention was attracted to a painful twitching and weakness of the lower extremities, and on attempting to rise found himself unable to support himself; he was seized with vertigo and would have fallen had he not been caught. Consciousness was, however, not lost. A short time after this occurrence the left leg was completely paralyzed. On the next morning the right leg also was paralyzed. There was retention of urine, and the bowels were constipated. Urine and the stools were passed involuntarily. Vomiting occurred repeatedly and flatus was passed by the bowel. There was a sense of formication upon the back. The lips were cyanotic; the expression of the face dull, indifferent, apathetic. The skin was moist, of normal temperature, and presented no exanthem. The pulse was 104, regular, quick; tension and strength were rather subnormal. The respiration was costo-abdominal and accelerated. The patient complained of a sense of burning in the hypogastrium. The palsy of the lower extremities was atonic. At the inner aspect of the upper portion of the right thigh was a burn that had resulted from the application of a hot-water bottle. The abdominal muscles were capable of some movement. The knee-jerks were absent. The tendon reflex was present upon the right, absent upon the left. The cremasteric reflex was preserved. Common sensibility was diminished in the lower extremities; analgesia was present; the temperature sense was abolished. Percussion of the lower dorsal and of the lumbar vertebræ occasioned pain. The appetite was impaired. The abdomen was tensely distended and tender. A urethral discharge was observed, and gonococci were found in the secre-

tion. In the course of the attack there was slight elevation of temperature. Death took place after a week's illness. At the post-mortem examination the brain was found hyperæmic and œdematous. The cord and membranes presented no macroscopic lesion; but on microscopic examination a leukomyelitis was found in the dorsal region, with some degree of inflammation of the pia. The peritoneum presented a reddened appearance; in numerous places there were deposits of fibrinous, puriform membrane. The vermiform appendix was free from lesion. The bladder was distended with turbid fluid. Its wall was hemorrhagic, especially in the region of the trigone; at the fundus was an area of ulceration, in places extending to the retroperitoneal connective tissue, which had become infiltrated. The pelves of the kidneys were reddened. The substance of the left kidney appeared cloudy. On the surface of the right kidney were numerous prominent yellow points, each surrounded by an areola of redness, and from which could be scraped epithelial and pus cells. The medullary cones presented similar collections. The prostate was small. The lower portion of the rectum was reddened. The spleen was enlarged and softened. Both lungs presented numerous areas of lobular pneumonia.

GOUT OF THE INTESTINES.

DR. A. HAIG (London) relates in the *Practitioner*, 1892, No. 295, several instances of colic and enteralgia in gouty subjects, clinically resembling in some instances typhlitis, which were rapidly relieved by full doses of salicylate of sodium. The author believes these to be gout of the intestinal walls, accompanied by the deposition of some insoluble urate in the fibrous structures of the intestine. Calomel aggravated the pain in one or two instances—possibly owing to the formation of the more insoluble urate of mercury. The salicylate acts by its solvent action on the urate deposit. The author attributes to a similar action its beneficial effects in the treatment of lead colic.

TREATMENT OF MYXŒDEMA.

At a recent meeting of the Clinical Society of London, DR. ARTHUR DAVIES, DR. CALVERT, and DR. PASTEUR presented several patients who had been treated by internal administration of the thyroid gland itself, or by an extract made therefrom. The patients exhibited had, previous to treatment, presented all the characteristics and symptoms, physical as well as mental, of typical myxœdema. The improvement manifested in each case might fairly be called marvellous.

Within a short time of the commencement of treatment the patients begin to lose the characteristic phenomena of the disease. The features lose their puffy and mask-like appearance, the hair begins to grow, the skin becomes soft and smooth, and the intellect brightens. These obvious indications of improved nutrition are accompanied by an increased discharge of urea, a very marked and often rapid loss of weight, and a general sense of improved health. The improvement is manifested with striking constancy whatever method of administration is adopted, whether by subcutaneous injection, as

advocated by Murray, of Newcastle; by feeding with the raw gland, as recommended by Dr. Hector Mackenzie; or by taking the freshly prepared extract of the gland by the mouth, as in the case of Dr. Pasteur's patient. Equally good results were also obtained by Dr. Calvert by giving the gland lightly fried. In all cases the result was the same, and the conclusion seems irresistible that the thyroid gland does impart to the blood something which neutralizes the tendency to myxœdematous degeneration, and even removes the latter when it is present.

It would appear that it is not so much the rapidity of the changes effected in the body as the quantity of the substance administered that is open to risk. In Dr. Pasteur's patient alarming symptoms of cardiac enfeeblement, with syncopal attacks and dyspnœa, were directly attributable to an overdose (a whole sheep's thyroid) on two or three occasions, and did not reproduce themselves after the dose had been sensibly diminished (20 to 30 minims of freshly prepared extract in infusion of cloves every third day). Dr. Ord referred to a case in which similar alarming symptoms had occurred as the result of overdosing.

On the whole, the most convenient form of administration is in the form of powders (prepared by desiccating a glycerin extract of the gland), or by giving the fresh extract by the mouth.

WEST AFRICAN "BLACKWATER" FEVER.

At a recent meeting of the Pathological Society of London, DR. WHEATON showed preparations from the organs of a patient who suffered from this disease. It occurred only in persons who had previously suffered from malaria, and was very fatal to Europeans. After a preliminary stage of numbness of the extremities and shivering, with lumbar pain, slight jaundice developed, with some fever, and was followed by the passage of porter-colored urine. In severe cases bilious vomiting occurred, and death followed on uræmic symptoms. One patient might have as many as ten attacks. The urine contained hæmoglobin and methæmoglobin, but no red blood-corpuscles. The clinical symptoms thus closely resemble paroxysmal hæmoglobinuria in European countries.

The preparations showed in the cortical portion of the kidneys cloudy swelling of the epithelium and the accumulation of granules of hæmoglobin in the tubules. In the pyramids the tubules were filled up by large masses of hæmoglobin. The spleen showed small red points, due to collections of hæmoglobin, as could be shown by examination with the microspectroscope, as also the presence of large circular cells with large nuclei, also containing pigment. The liver showed cloudy swelling of the cells and the presence of collections of large granules of pigment in them. There was no blood-pigment in the vessels or capillaries of the organs, nor were there extravasations of blood. The pathological appearances were thus seen to coincide with those recorded in the few instances in which the results of microscopical examination of the organs in paroxysmal hæmoglobinuria had been made, and confirmed the clinical resemblance between the latter disease and "blackwater" fever.

The plasmodium of malaria could not be found in these cases.

DIABETES FOLLOWING INFLUENZA.

DRS. HETHERINGTON and BROWN record the case of a boy of fifteen who had influenza one month previously. For three weeks he had suffered from thirst, which became distressing, and was associated with the passage of large quantities of urine. He rapidly lost flesh and strength, and when seen presented an aspect suggestive of diabetes. The urine was typically diabetic, loaded with sugar, and of a specific gravity of 1040. He improved rapidly under strict dieting and half-grain doses of codeine. Nine days from commencement of treatment all sugar had disappeared from the urine. A similar case was reported in the *Lancet* for April, 1892.—*Lancet*, 1892, No. 3621.

CROUPOUS PNEUMONIA COMPLICATED BY PURPURA HÆMORRHAGICA.

JAWORSKI (*Wiener med. Presse*, xxiv. 3, p. 84) has reported the case of a man, twenty-seven years old, who, while engaged in making an excavation, was seized with a severe chill, soon followed by profuse bleeding from the nose and mouth and loss of consciousness. On the following day the hemorrhage was repeated several times, and, in addition, pain in the right side of the chest and general weakness and depression manifested themselves. On examination, the evidences of croupous inflammation of the middle lobe of the right lung were detected. The skin was rather pale and somewhat moist. Upon the lower part of the body, from the umbilicus downward, were numerous subcutaneous hemorrhages, varying in size from a pinhead to a lentil. There were also hemorrhages beneath the conjunctiva, into the sclera and beneath the mucous membrane of the inferior surface of the tongue and lower lip. Neither the gums nor the palate nor the larynx presented any changes or lesions. The tongue was dry and covered with a coating with which coagulated blood was mixed. Blood constantly trickled from the nose. The temperature was elevated; the pulse full, tense, regular, accelerated; the respiration accelerated. There was considerable frothy, blood-stained expectoration. The urine was blood-stained and contained red corpuscles. The patient grew progressively worse, and died in the course of five days amid the signs of exhaustion. The history and the symptoms excluded phosphorus-poisoning, arsenical poisoning, scorbutus, and typhus fever. Bacteriological investigation was not made. The post-mortem examination confirmed the diagnosis of croupous pneumonia complicated by purpura hæmorrhagica.

A CASE OF HEMI-HYPERTROPHY.

TILANUS (*Münchener med. Wochenschr.*, 1893, No. 4, p. 65) has reported the case of a girl, ten years old, who was brought to him by her mother because of a limp in walking. The left leg had always been shorter than the right, but recently the difference had become more decided. It had also been noticed that the right foot was larger than the left, so that the child could wear its mother's shoe. Upon examination it was found not only that the right leg and foot were larger in all dimensions than the left, but that the entire right half of the body (including the buttock, the arm, the hand, and the right half of the face) was better developed than the left half. The right

half of the tongue was the broader and thicker, the right cheek the thicker and fuller. The right foot and hand of the child were even larger than those of the mother. In stature the child measured 54 inches, the mother 63.5 inches. It could not be observed that there was any difference in the muscular development of the two halves of the body, though the right arm and the left leg were each stronger than their fellows. Electric reactions and reflexes showed no abnormality. The skin of the trunk, arms, and legs presented a marbled appearance, which became more decided when the child was cold, and especially upon the right; when the degree of cold was extreme the child actually became entirely blue. She was cheerful, intelligent, complained of no pain, and was in all other respects healthy. As a child, she had not been strong, and was three years old before she could walk; the asymmetry was also first observed at this time. There was no history of a similar affection in any other member of the family. There had been nothing unusual about the mother's pregnancy, and no accident had occurred after the birth of the child. Tilanus refers to a similar case reported by Möbius and to one by Demme—the only two that he could find in the accessible literature.

“SPONTANEOUS” RUPTURE OF THE STOMACH; EPITHELIOMA OF THE
ŒSOPHAGUS.

WUNSCHHEIM (*Prager medicin. Wochenschr.*, xviii. 3, p. 21) has reported the case of a man, fifty-two years old, who for a period of about six months had presented symptoms of gastric derangement, to which difficulty of swallowing was early added, so that finally solids could not be taken at all, and liquids only in small quantities. An œsophageal sound encountered obstruction ten and one-third inches from the teeth. On the evening of the day on which this examination was made, the patient's pulse became smaller and symptoms of collapse appeared, which soon subsided, to be renewed, however, on the following day and leading to a fatal termination. At the necropsy a neoplasm was found in the œsophagus about two and one-half inches below the inter-arytenoid notch, and a second new-growth three-quarters of an inch lower which involved almost the entire circumference of the gullet. Both growths were ulcerated, and the lower had perforated the aorta between the third and fourth intercostal arteries. Other nodules were present further down in the œsophagus, and the related lymphatic glands were enlarged. The stomach was distended by a large quantity of blood, partly liquid, partly clotted, and a process of clotted blood extended from the stomach through the cardia a short distance into the œsophagus. The pylorus was firmly closed. On the posterior wall of the stomach, beginning near the cardia and running parallel with and close to the lesser curvature, was a tear of the mucous membrane about two inches long. At a distance of three inches, and parallel with this tear, was a second tear of equal length. The margins of neither tear presented evidence of digestion. The small intestine, down to the ileo-cæcal valve, contained dark, soft chymous masses, while the contents of the large intestine were bile-stained. On histological examination the neoplasm was found to be a squamous-celled carcinoma. The interesting features of the case were the fatal hemorrhage, unattended

with vomiting, and the incomplete rupture of the stomach, probably as a result of over-distention. Wunschheim could find records of only six cases of "spontaneous" rupture of the stomach.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE
UNIVERSITY AND GERMAN HOSPITALS;

ASSISTED BY

ALFRED C. WOOD, M.D., AND C. L. LEONARD, M.D.,

INSTRUCTOR IN CLINICAL SURGERY, UNIVERSITY ASSISTANT INSTRUCTOR IN CLINICAL SUR-
OF PENNSYLVANIA; ASSISTANT SURGEON, GERY IN THE UNIVERSITY OF
UNIVERSITY HOSPITAL. PENNSYLVANIA.

LARYNGECTOMY.

LANZ, in the *Archiv für klinische Chirurgie*, 1892, Band xlv., Heft 1, after a review of the subject, reports in detail twelve operations performed in Kocher's clinic in Berne. The conditions calling for operation were as follows: Lupus, one case; carcinoma, five cases; epithelioma, four cases; tuberculosis, one case; sarcoma, involving the larynx secondarily, one case. As a rule, a preliminary tracheotomy was performed. The most common neoplasm demanding extirpation of the larynx is carcinoma. The disease is much more common in men than in women. In the Breslau clinic, of nine cases but two were in women. Of one hundred and seventy-six cases of carcinoma of the larynx collected by Wassermann, but twenty-nine affected the female sex. The question of effecting a radical cure by this operation depends upon the stage which the disease has reached. That the final results of laryngectomy are not more satisfactory is due to the fact that the patient does not consult the surgeon until the disease is in an advanced stage. As a rule, valuable time has been lost in using gargles, and in submitting to various local applications. Usually by the time malignant disease is diagnosed the process is far advanced. Primary carcinoma of the larynx, as is shown by the cases reported, does not tend to give metastasis, but to remain localized and to spread by contiguity. The more distant lymph glands are not affected. A malignant tumor of this region cannot be extirpated too early, even at the expense of the sacrifice entailed by loss of the voice and difficulty in swallowing. Semon states that tumors of the larynx have always been found to be larger after laryngectomy than had been expected from the laryngoscopic picture. Endo-laryngeal excision is impossible, and the removal of the growth by such measures as the snare and by twisting off by means of forceps is condemned. The physician, the author remarks, who does not use the knife immediately in carcinoma of the breast, or does not send the patient

to a surgeon, is guilty of manslaughter, and the same remark will no doubt soon apply to cases of carcinoma of the larynx unless some specific for this affection is discovered. The operation is not a dangerous one. Of the twelve cases tabulated, all recovered but one. This patient died on the fifth day from interference with respiration by tenacious mucus which collected in the bronchial tubes.

TUMORS OF THE BLADDER.

BARLING, describing the symptoms of bladder tumors (in the *Birmingham Medical Review*, 1892, vol. xxxii., No. 170), states that by far the most constant evidence of intra-vesical growth is hæmaturia. Of 201 miscellaneous tumors, hemorrhage was present in 162 of the cases. Papillomas are almost invariably accompanied by hemorrhage. This is usually the first, and sometimes, indeed, the only symptom. In carcinoma or sarcoma of the bladder, although hemorrhage may be the first symptom, pain and difficulty in emptying the bladder speedily arise in the majority of cases. Hæmaturia dependent upon tumor of the bladder is always intermittent at first. Gradually the intervals between the attacks become shorter and shorter, while the hemorrhage becomes more and more severe until, in the course of months or years, it may be constant. By this time, if the growth is malignant, other symptoms will have appeared. If the act of micturition be watched, the proportion of blood will often be found to increase greatly toward the end of the act. The amount of bleeding is no indication of the size of the tumor, nor is it, as a rule, increased by exercise, nor diminished by rest in bed.

Other early symptoms are pain, frequent micturition, retention and incontinence of urine. Sudden cessation of the flow may occur, as in vesical calculus. Fragments of the tumor were found in the urine 29 times in 201 cases, distributed as follows: In papilloma, 15 times in 76 cases; in fibroma and fibro-myoma, once in 20 cases; in myoma and myo-fibroma, twice in 15 cases; in dermoid, twice in 2 cases; in sarcoma, once in 22 cases; in carcinoma, 8 times in 64 cases. Usually the fragments correspond with the bulk of the tumor, but this is not invariably the rule.

As an aid in diagnosis, the vesical sound may be carefully used. A finger introduced into the vagina or rectum at the same time makes the sounding more conclusive, either for or against tumor; at the same time stone may be searched for. Bimanual palpation is of greater value than any of the other methods. It is carried out as follows: The patient is placed in the dorsal decubitus with the pelvis somewhat raised on a pillow. The bladder should be emptied with a catheter, and it is advisable to administer an anæsthetic, though not absolutely necessary. With the left hand, firm pressure is made above the pubes, while one or more fingers of the right hand are introduced into the rectum or vagina. In this way a tumor of any size can scarcely escape detection. In patients with deep perineums or considerable abdominal fat, the examination may give but little information. The advantages of this method are, that it does not provoke hemorrhage as does sounding; that the size and consistence of the growth can be made out, and the state of the bladder-walls and adjacent structures can be determined at the same time. The cystoscope gives most positive information of the condition

of the interior of the bladder. Therefore, when doubt exists, this instrument should be employed. Tumors of the bladder are to be distinguished from stone, cystitis with ulceration, tuberculosis of the bladder, malignant disease of the kidney, and renal calculus.

AN EFFICIENT METHOD OF CONTROLLING HEMORRHAGE AFTER SUPRAPUBIC PROSTATECTOMY.

KEYES describes (*Medical Record*, New York, September 17, 1892) a new means of controlling hemorrhage after supra-pubic prostatectomy. Those upon whom this operation becomes necessary are so frequently advanced in years, and are so nearly exhausted by their trouble and the complications which so frequently accompany it, that any measure which will diminish the amount of hemorrhage after operation must prove of the greatest service. A tampon is made of bichloride gauze in the following manner: A square of four thicknesses, measuring about six inches either way, is cut; upon this are placed eight thicknesses whose sides measure four inches, and upon this eight other thicknesses three inches square. Centrally upon the three-inch pad a small white shirt-button is tied by a double ligature, which is then made to transfix the pad and tied upon the six inch-square surface. Each of the corners of the six-inch pad is stoutly tied with a piece of silk, the ends of which contain a double knot. To facilitate extraction a piece of silk is attached to the central button, the end of this containing a single knot. The pad is applied by passing an instrument through the urethra into the bladder, and attaching to this the ends of the silk which transfixed the pad, when the instrument is withdrawn, together with the silk threads. By pulling these the tampon is powerfully drawn into the excavation resulting from the operation. The double ligature is then tied over a piece of gauze at the urinary meatus. In case a perineal urethrotomy has been necessary the strings may be drawn through this wound and tied over a perineal pad. For the removal of this pad, after cutting the strings which are tied over the pad at the meatus or perineum, the last string attached to the button, and the strings fastened to the four corners, are all to be pulled upon together.

The author publishes a letter received from Dr. Cabot, of Boston, who has used this pad with success, but on account of some difficulty experienced in its removal the latter suggests the following modification: A long strip of gauze of the proper width is selected, the edges turned in and stitched. The strip is then folded repeatedly on itself, making a pad of the desired size. A double silk thread fastened to a button is passed through the centre of the pad, as in the preceding case. A single thread is then attached to the last fold of the gauze. Traction on this, after the retaining thread has been loosened, will unfold the gauze into a long strip, exactly as occurs in the "packing" that is constantly employed in surgery.

THE MECHANISM OF BRAIN INJURIES.

MILES discusses at length (*Brain*, London, 1892, part ii.), the various theories of concussion of the brain. The author casts the weight of his opinion against the possibility of mere concussion resulting in death, and he

has endeavored to explain the ultimate cause of the symptoms in cases of so-called concussion of the brain. The vibration theory, which was held by Bruns, Liston, and Miller, assumes that when a blow of sufficient force impinges on the cranium it must be flattened at the point of impact, and expanded in some other direction, these changes being of but momentary duration, and followed by a return to the normal condition; the idea being that as the brain fills the cranium, the vibrations of the latter are transmitted to the former. Miles objects to this view on the ground that the brain does not exactly fill the cranial cavity, but is surrounded by the cerebro-spinal fluid; that the cranium is not a spherical body, as claimed by the advocates of this theory, and that it is not, therefore, subject to the laws governing spherical bodies; and finally, that the anatomical arrangements are opposed to such a conclusion.

Faus, Nélaton, and others explain the symptoms of cerebral concussion by the multitude of capillary hemorrhages so often found in the brain substance. To this theory the author objects, because the multiple hemorrhages are not constantly found, and because, in some cases, the symptoms so soon pass off that no such lesions could have existed.

When it is considered how general the symptoms of concussion are—every portion of the brain being affected—a derangement of the circulation seems to offer a plausible working theory, and this view has been accepted by most modern writers. After weighing the testimony at hand, and experimenting on animals, the author “thinks that the weight of evidence is in favor of the view that the symptoms of cerebral concussion are due to a profound disturbance of the circulation of the brain, and that the alteration is in the direction of anæmia.” The author’s experiments seem to confirm the theory of Duret, that this anæmia was brought about reflexly by irritation of the restiform bodies.

Following the record of a series of experiments the author explains an injury to the head producing gross lesion as follows: “A blow is dealt to the cranial wall, and surrounding the point of impact the skull is depressed, forming the ‘cone of depression,’ and from the area into which this cone projects the cerebro-spinal fluid is forcibly expressed . . . the ‘cone of bulging’ would accommodate all, or most all, of this fluid. The cones of depression and bulging, however, are of only momentary existence . . . therefore, when the bone recoils a vacuum is formed first at the cone of depression, and next at the cone of bulging, when the fluid recedes.” The result of this is, that the delicate bloodvessels being for the moment unsupported, rupture. The author believes, with LeGros Clark, that fracture from *contre-coup* is of very rare occurrence.

A number of experiments are detailed which are advanced in favor of the cerebro-spinal fluid wave theory. The autopsy revealed in some of these experiments, in addition to other lesions, hemorrhages into the internal ears and along the course of the auditory nerves, so that if the tympanic membranes had been ruptured, a symptom supposed to be diagnostic of fracture at the base of the skull, namely, bleeding and the flow of cerebro-spinal fluid from the ears, might have been present when no such fracture existed.

The author concludes as follows:

1. That the group of phenomena commonly spoken of as "concussion of the brain" is the result of a temporary anæmia of that organ.

2. That this anæmia is the result of reflex stimulation of the restiform bodies, and perhaps other important centres in the region of the bulb.

3. That these parts are stimulated by the wave of cerebro-spinal fluid, which rushes through the aqueduct of Sylvius, the foramen of Magendie, and from the sub-arachnoid space of the brain to that of the cord, when a severe blow is dealt over the skull.

4. That, in accordance with the laws of hydrostatics, this cerebro-spinal fluid wave will disturb the equilibrium of the ultimate nerve-cells throughout the central nervous system.

5. That the hemorrhages found throughout the brain-substance and on its surface are to be ascribed to the recession of the cerebro-spinal fluid, which naturally supports the bloodvessels of the cerebrum.

6. That the petechial hemorrhages found in cases of so-called concussion are not the proximate cause of the symptoms found in that condition. They are rather to be looked upon as an index of the force producing the injury than as the cause of the resulting phenomena.

PARTIAL RESECTION OF THE PERINEAL (DEEP) URETHRA FOLLOWED BY IMMEDIATE AND TOTAL RESTORATION.

GUYON proposes (*Gaz. hebdomadaire de Méd. et de Chir.*, 1892, No. 20) partial resection of the urethra in cases of stricture of this canal. It has been observed that the lower wall is most frequently the seat of lesions. The fact that the upper wall is generally healthy is in favor of partial resection, as advised by Guyon. In total resection the ends of the canal separate too much. Inasmuch as it is not necessary to make end-to-end approximation, the author uses the soft parts of the perineum to form the urethra. The danger of urinary infection is but slight, so that he closes the wound without drainage.

The operative procedure consists in making an incision through the soft parts of the perineum, exposing the urethra, when the diseased area is removed by transverse incisions in healthy tissue. The urethra may be united directly if it does not cause dangerous tension, otherwise the suture is to be made in a transverse direction; the mucous membrane is not included in the suture. The perineum is sewed in three layers, the deepest being sewed with catgut. A soft rubber catheter, 20 or 21 F., is introduced through the urethra and allowed to remain two to four days. Six cases are reported, of which four made rapid and satisfactory recoveries.

TRAUMATIC EPIDERMAL CYSTS CONTAINING MATTER OF SEBACEOUS APPEARANCE.

PÉRAIRE describes in the *Revue de Chirurgie*, 1892, No. 10, three cases from Terrier's service at the Hôpital Bichat. In two of these cases the cyst was situated in the pulp of the middle finger; in the third case it was found in the palm of the hand. It is probable that these cysts are usually confounded with sebaceous cysts, which would account for the apparent rarity

of the kind described by Péraire. Froquart first pointed out the true character of these cysts, and distinguished them by the name "epidermal." Jonnesco added the term "traumatic" to indicate one of the most important peculiarities of these cysts.

These tumors are of slow growth, gradually enlarging until their size becomes an inconvenience. When developed they are hard, elastic, and semi-fluctuating. The skin is adherent, but there is no change in its color, and no excoriation. The growth is movable on the deeper structures. In the cases reported the presence of the tumors was an annoyance to the patients in their work. There was no pain. In each case the cyst was excised.

Careful histological examination of these tumors showed them to be entirely of epithelial origin. There was nothing in their composition to suggest sebaceous matter. The four classical zones of the epidermis were represented in these tumors. Neither papillæ nor glandular elements have been seen in their structure.

Although traumatic, these growths do not result from a single accident, but from repeated trauma incident to the occupation of the patient.

The origin of these cysts is not a sebaceous gland, but a veritable indentation and proliferation of epidermal cells.

DERMATOLOGY.

UNDER THE CHARGE OF

LOUIS A. DUHRING, M.D.,

PROFESSOR OF DERMATOLOGY IN THE UNIVERSITY OF PENNSYLVANIA.

DERMATOL IN DERMATOLOGICAL PRACTICE.

H. ISAAC (*Deutsche med. Wochenschrift*, 1892, No. 25) speaks highly of this new remedy in cases where a superficial and drying effect is desired, as in the various forms of intertrigo resulting from friction and sweat; in intertrigo complicated with eczema; in acute weeping eczema; in acute inflammations produced by such substances as corrosive sublimate and iodoform; and in the various affections characterized by superficial losses of substance, as erosions, excoriations, and fissures. It is also valuable in burns of the second degree, and in freely-secreting leg ulcers, its action being to aid cicatrization.

DYSIDROSIS AND CHEIROPOMPHOLYX.

A. SANTI (*Monatshefte für praktische Dermatologie*, Bd. xv., No. 4) discusses the nature of these diseases and the relation of one to the other, and concludes that they do not concern directly the apparatus of the sudoriparous secretion. Cheiropompholyx is a disease *sui generis*, and is in all probability

a neuritic dermatosis, in which the lesion of the sensible nerve elements is seated either peripherally or, more probably, centrally.

The disease which has been called dysidrosis does not really exist, but is a variety of hyperidrosis in which, owing to an abnormal, excessive development of epidermis, there results retention of sweat, constituting this so-called disease.

CASE OF XANTHOMA MULTIPLEX IN A CHILD.

MCCALL ANDERSON reports (*Brit. Med. Journ.*, Dec. 1892) a case in a child three years of age, which was probably congenital. The lesions consisted of papules, thickly set together, varying in size from a pinhead to one-sixteenth of an inch in diameter. Some had coalesced. They were rounded, flat on their summits, glistening in certain lights, of a light buff color, soft in consistence, the surrounding skin being in no way thickened or infiltrated nor in any way altered. The outline of the confluent patches was made up of segments of circles. The lesions were symmetrical, situated on the face, neck, shoulders, arms, and legs, and were most numerous on the shoulders. The tissue, under the microscope, showed evidences of an irritant acting on the skin, producing the lesions of chronic inflammation in the form of a new cellular growth, similar to those of tuberculosis and syphilis, but without the arrangement or aggregation found in the latter. There is a further resemblance to the tuberculous lesion in that the cells possessed a striking tendency to fatty degeneration.

TWO CASES OF DERMATITIS GANGRÆNOSA INFANTUM.

CAMPBELL WILLIAMS (*Lancet*, Nov. 12, 1892) records two examples of this rare disease, in neither of which was there any history or evidence of vaccinia or varicella as an etiological factor, nor were the infants the subjects of rickets or congenital syphilis. From a pathological standpoint the disease may be regarded as due to microbic infection. Thomas Barlow first pointed out the frequent presence of tubercle in this disorder. One case (unvaccinated) recovered; the other died, and both lungs were studded with miliary tubercles. The skin lesions were numerous, disseminated, roundish, sharp-edged, conical ulcers, varying in depth from three-quarters to a quarter of an inch, covered with a thin, adherent, brownish-black slough. The disease tended to localize about the buttocks and thighs. The ulcers were in some instances as large as a quarter-dollar. They improved or cicatrized under iodoform dressings.

REACTION OF NORMAL SWEAT.

HEUSS (*Monatshefte für prakt. Derm.*, Bd. xiv., Nos. 9, 10, and 12) found the sweat of healthy men during rest to be normally acid, but when, after the administration of pilocarpine or boric acid baths, the sweat became profuse, the reaction was neutral or alkaline. The reaction of the sweat is to be distinguished from the acidity found in the skin as a tissue, which extends as far as the prickle-cell layer. Even when the sweat is alkaline the skin may be acid. The normal acidity of the sweat is the product of the less acid

neutral, or even alkaline secretion of the sweat glands and of the acid cutaneous fluid. Increase of alkalinity depends on the relative proportion of the sweat to the cutaneous fluid.

THE PRESENT STATUS OF PSOROSPERMOSIS.

NEISSER (*Journ. of Cutan. and Gen.-urin. Diseases*, October, 1892) states that all that can be conceded now is the possibility of parasitic psorosperm inclusion. There is no proof that they are really parasites and not simply abnormal and pathological cell-formations. In the cases reported by Darier and others as psorospermiosis follicularis, it is questionable whether the disease is due to parasites or is an inherited keratosis.

A THIRD CASE OF XERODERMA PIGMENTOSUM IN THE SAME FAMILY.

DR. A. W. BRAYTON, of Indianapolis, records (*Journ. of Cutan. and Gen.-urin. Diseases*, October, 1892) the above fact, the observation being additional evidence that this rare and disfiguring disease tends to occur in several members of the same family. The disease began in the sixth month of life, and with small, white atrophic spots upon the face, with no prodromal symptoms of erythema, telangiectases, or pigmentation. Dr. Brayton thinks that the soft, fleshy tumors which characterize the disease at a later stage should be scraped out promptly on their appearance, the resulting wounds bleeding freely, but healing satisfactorily.

IODINE, CARBOLIC ACID, AND CHLORAL IN DERMATOLOGY.

DR. C. W. CUTLER (*Journ. of Cutan. and Gen.-urin. Diseases*, October, 1892) for several years past has employed these remedies (equal parts of tincture of iodine, carbolie acid, and chloral) in combination as a topical application in numerous diseases of the skin, with good results. The combination is of more value than any of the drugs employed alone, and is antiseptic, anti-pruritic, analgesic, and absorbent. It is a powerful agent and should be employed with caution. It is liable to produce a dermatitis. It possesses a penetrating action into the skin, and hastens the absorption of inflammatory products in a remarkable manner. It is especially serviceable in parasitic diseases of skin and in all forms of chronic skin diseases characterized by thickening and induration of the skin, accompanied by scaling and itching. Ringworm of the scalp, beard, and body, alopecia areata, superficial paronychia, psoriasis, squamous eczema in small patches, lupus erythematosus, molluscum epitheliale, chloasma, vitiligo, and pruritus. In its pure state it should be applied by the physician himself, and at first only to small areas.

LEPROSY: ITS NATURE AND CARE.

DR. ARNING, of Hamburg, who has had much experience with this disease, presents his views before the Second International Dermatological Congress (*Brit. Journ. of Derm.*, October, 1892) as follows: 1. Leprosy is a chronic infectious disease, limited to mankind, and is conveyed directly or

indirectly by the bacillus lepræ. 2. The importance of this disease for Europe must not be underrated. 3. Besides the old European seats of leprosy, new endemic centres have recently developed on this continent (*e. g.*, Lithuania). 4. The conditions under which leprosy holds its old ground and develops new endemics are not yet clearly understood. Filth and poverty can no more be made exclusively responsible than a particular kind of food. 5. Leprous patients should be registered by the health authorities, and controlled as to their nationality, household, and changes of residence, upon international principles. 6. Should the disease have established a new footing of endemic type anywhere, then, but not before then, strict segregation in asylums or colonies should be resorted to.

PEDICULI CAPITIS AS A CAUSE OF PRURITUS VULVÆ.

DR. G. F. LYDSTON (*Journ. of Cutan. and Gen.-urin. Diseases*, October, 1892) records a case where these parasites of the scalp were met with in large numbers on the hairs of the mons Veneris and labia in a girl of fifteen, who was examined for intense vulvar itching and for difficult menstruation. No pediculi were found on the scalp or elsewhere. The child was not aware of the presence of the parasites.

SYPHILIS TARDIVA.

PROFESSOR NEUMANN, of Vienna (*Brit. Journ. of Derm.*, October, 1892), in an essay before the Second International Dermatological Congress, summarizes his views as follows: 1. The chief etiological factor in tertiary syphilis is some latent virus resulting from imperfect treatment in the early stages, assisted by constitutional diseases such as tuberculosis, malaria, scurvy, diabetes, Bright's disease, and chronic alcoholism. 2. Tertiary syphilis cannot be considered as exclusively a metastasis, but in most cases as the result of some exudation persisting in the tissues, which, under the influence of some of the factors enumerated above, takes on new action. 3. Tertiary syphilis occurs in about six or seven per cent. of all cases of syphilis, and in the great majority does so in the third year after primary infection, although it may show itself earlier or much later. 4. Its most frequent manifestations are in the skin, mucous membrane, and bones. 5. So-called epidemic syphilis (*radesyge*, *skerljevo*, *frenjak*, etc.) is not a disease *sui generis*, but ordinary tertiary syphilis, along with some cases of late hereditary syphilis. 6. Hereditary transmission to a later generation than the first has not been proven. 7. The examination of the blood gives similar results to that in secondary syphilis; the amount of hæmoglobin is invariably greatly diminished; the diminution of the number of the red corpuscles and increase of the white, although less marked, are equally constant changes.

STAPHYLOCOCCI PURULENTA CUTANEA.

LOUIS WICKHAM (*Brit. Journ. of Derm.*, July, 1892) points out that pus is very frequently met with in diseases of the skin, and that bacteriology has shown that suppuration may be produced by many totally different causes, the principal of which are: 1. Certain chemical substances, without any

microbic participation in the process, as essence of turpentine injected into cellular tissue. 2. Microbes of all kinds, as bacillus tuberculosis, which causes "cold abscesses," bacillus anthracis, virus of chancre, streptococcus pyogenes, staphylococcus pyogenes aureus et albus, etc. The conclusions of the author may be formulated thus: There exists a dermatosis which is caused by the pyogenic staphylococci, which merits the title of staphylococcia purulenta cutanea. This disease presents itself under such different forms as furuncle, certain folliculitides, and impetigo, according to the predominance of certain of its morbid elements. There exist, moreover, a large number of suppurative affections whose pathogenetic nature is not now entirely understood, but whose place will probably be with the staphylococcia.

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC;

CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE;

CLINICAL LECTURER ON OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE;

VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

PUERPERAL GONORRHOEA.

KRÖNIG, in the *Centralblatt für Gynäkologie*, 1893, No. 8, describes nine cases of puerperal gonorrhœa in which cultures were made from the lochial discharge. Pure cultures of the gonococcus were found most frequent from four to six days after delivery, and rapidly disappearing. The presence of these germs was accompanied by fever, in four cases rising to 104° F. The lochial discharge was increased, purulent, and not offensive. The lochia were observed to contain pus as early as four days after delivery. Seven of the nine cases showed marked fever two weeks after confinement, and had a purulent discharge which persisted. The uterus was also deficient in involution. Two cases gave more positive evidence of septic infection, the first leaving the hospital two weeks after confinement, returning two weeks later with an exudate in the pelvic peritoneum to the left of the uterus. The second patient was delayed in hospital with parametritis and gonorrhœal tendo-vaginitis. The patient also suffered from tendo-vaginitis of the right elbow and right hand. The exudate in the pelvis was accompanied by a temperature of 104°.

The following conclusions are drawn from the cases in question: In patients suffering from gonorrhœa, infection may easily travel to the interior of the uterus after labor; this infection may cause fever; this germ does not usually unite with others to produce mixed infection; gonorrhœal infection in the puerperal state is seldom directly dangerous to life, but leads to subsequent disorders, especially to infection of the endometrium, Fallopian tubes, and the tissues about the uterus.

CYSTIC TUMOR OF THE FETAL NECK COMPLICATING LABOR.

At a recent meeting of the Berlin Obstetrical Society, STRASSMANN showed the cadaver of a newborn infant having upon the right side of the neck a cystic tumor which had complicated labor. The child was born in breech presentation, emerging as far as the umbilicus, the birth ceasing at that point; although the arms were brought down, yet the remainder of the body did not follow, and an examination by the entire hand showed a tumor of the neck preventing delivery. It was punctured, and a quantity of clear yellowish fluid escaped, when birth was easily completed. The placenta was found to be œdematous.

A CASE OF TRIPLE ECTOPIC GESTATION.

In the *Centralblatt für Gynäkologie*, 1893, No. 7, SANGER reports a case of triple ectopic gestation in which a twin pregnancy was found in the wall of the uterus, while a third ovum was discovered in a blood-clot at the fimbriated extremity of the right tube. A careful examination of the case showed the condition to be an intra-mural twin pregnancy at the point of entrance of the right tube into the uterus, while at the abdominal end of the same tube there was a third ovum, the whole being an example of unilateral, ectopic, triple gestation.

SYMPHYSIOTOMY FOUR AND ONE-FOURTH YEARS AFTER A
CÆSAREAN SECTION.

FROM Chrobak's clinic, in Vienna, comes the account of this operation by REGNIER, who reports it in the *Centralblatt für Gynäkologie*, 1893, No. 6. The patient was a multipara upon whom BREISKY performed Cæsarean section for the relative indication four and one-fourth years previously. The patient was rhachitic, and was pregnant at term. The fœtus was in transverse presentation; the pelvis a typical, flat, rhachitic pelvis, whose antero-posterior diameter measured $7\frac{1}{2}$ cm. After the field of operation had been made clean, the membranes were ruptured, and podalic version performed. Symphysiotomy was then easily accomplished, and the child delivered manually. The placenta was shortly afterward expressed. Measurements of the child's head showed that birth without radical interference would have been impossible. Two silver sutures were used to unite the symphysis, and iodoform gauze packed in the lower angle of the wound. The patient made an uninterrupted recovery.

THE PERFORMANCE OF VERSION BY GRASPING ONE LEG OF THE FŒTUS.

In the *Edinburgh Medical Journal*, 1893, No. 451, NAGLE contributes an account of his experience in version accomplished by grasping one fœtal leg. He considers that it is a matter of absolute indifference which leg is seized in order to turn the fœtus *in utero*. If it is indicated that the leg brought down shall lie in front behind the symphysis, immediately after version the lower leg should be brought down in dorso-anterior position; in dorso-posterior, the upper leg should be grasped. In incomplete foot presen-

tation, with the posterior leg outstretched, the latter will rotate to the front so that the back of the foetus glides past the promontory. If, in cases of the last sort, it is necessary to complete delivery, artificial rotation of the foetal trunk, so that the outstretched leg comes in front, is indicated.

IS SYMPHYSIOTOMY JUSTIFIABLE WHERE THE FŒTUS HAS PERISHED?

IN the *Annales de Gynecologie*, February, 1893, this question is discussed by QUEIREL, of Marseilles, and PINARD, of Paris. The latter concludes that when the child is dead symphysiotomy is indicated only in those cases where the contraction of the pelvis is so great as to render embryotomy impossible, or so difficult that the latter becomes exceedingly dangerous to the mother.

THE INDUCTION OF PREMATURE LABOR BY CHAMPÉTIER DE RIBES' BAG.

HERMAN and SPENCER report (in the *British Medical Journal*, 1893, No. 1671) cases in which labor was induced by the use of this appliance. The bag measures three and one-half inches across its widest part, and is sufficiently elastic to be reduced by strong pressure to three inches. Letting a portion of the fluid escape from the bag makes it possible to compress it to two and one-half inches. It is made of silk, covered with rubber, has the shape of an elongated cone, measuring one foot in length and nearly four inches across the base. The upper third is curved to fit the pelvic axis, rapidly diminishing in diameter, while at the lower extremity there is a stop-cock by which the escape of fluid can be regulated. It is introduced by a special pair of forceps with detachable blades, and requires often a preliminary dilatation, especially in primiparæ. When sufficiently distended by 3 per cent. carbolic acid solution, the bag is left to be expelled with the child.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

INTERNAL CROSSING OF THE OVUM.

VEIT (*Zeitschrift für Geb. u. Gyn.*, Band xxiv., Heft 2) discusses at length the theories of Wyder, Pestalozza, and Schäffer with regard to the supposed passage of the ovum from one tube into the uterus and across its cavity into the opposite tube. In order that this should be proved, it is necessary, he thinks, to demonstrate conclusively the fact that the ovum is found in a tube the distal end of which has been entirely occluded by an inflammatory process occurring *before conception*. This point should be carefully noted in every operation for ectopic gestation. He believes that retained chorionic

villi within the tube may give rise to persistent hemorrhage, just the same as in an incomplete uterine abortion. In order that fluid blood may accumulate within the tube, it is necessary that either the distal end should be occluded, or that it should be closed by a bend due to surrounding inflammatory adhesions. If the ostium abdominale is open, and the tube is distended with blood, *ectopic gestation is always present*; the blood is then coagulated, and the clot is attached at one point on the inner wall of the tube. The blood is found to be fluid only at that stage in the tubal abortion at which the ovum has just been cast off and fresh hemorrhage is going on from the chorionic site. To this rule there is no exception save in the case of malignant disease. From an examination of his own specimens the writer arrives at the conclusion that in cases in which it is supposed that the ovum was discharged through the opposite tube into the uterus, and made its way subsequently into the other tube, it will be found that a small opening existed in the fimbriated end of the tube which was thought to be previously occluded, through which impregnation probably took place. Wyder's theory that, because an ovum has been found in the uterine end of an occluded tube, it was in the process of crossing over from the opposite side, is not tenable. This internal crossing of the ovum may be erroneously inferred in the following conditions: 1. When pregnancy occurs in a tubo-ovarian cyst, either in the tube or in the cyst. 2. When the ostium abdominale is closed during pregnancy. 3. When it is difficult to find the fimbriated extremity. 4. When the distal end of the tube has become occluded after rupture of the ectopic sac, by the retention of remains of the product of conception.

The writer adds some interesting observations bearing upon the site of impregnation. Wyder states that impregnation occurs at the fundus uteri, the ovum being carried downward by the motion of the tubal cilia toward the uterine cavity, while the upward motion of the cilia in the endometrium both assists the spermatozoa to move toward the fundus, and prevents the ovum from sinking downward to the cervix. Veit has extirpated three ectopic sacs, and found the cilia in the affected tube still in motion, while in other similar cases he has noted the presence of cilia. The theory that the cilia must be destroyed by previous inflammation before the impregnated ovum can remain in the tube has been generally adopted; but in reality it is only necessary that the progress of the ovum should be so slow that it is delayed in the tube until it is too large to pass into the uterus.

A NEW METHOD OF TOTAL EXTIRPATION OF THE CANCEROUS UTERUS.

HERZFELD (*Centralblatt für Gynäkologie*, 1893, No. 2) describes the following modification of the Hochenegg-Kraske operation, which he has adopted successfully in several cases: The patient being in Sims's position, an incision is made extending from the right posterior inferior spine, along the median line of the sacrum, to a point half an inch from the anus. The coccyx is removed, and, if necessary, the lowest sacral vertebra. The rectum being exposed, is drawn over to the left. The vagina can now be separated, if it is desired to resect a portion of it. Douglas's pouch is opened, the index finger is carried over the fundus uteri, and the organ is hooked backward. It is now possible to actually inspect the whole of the broad ligaments, the

vesico-uterine fold, and the ureters, and to feel the uterine arteries. Adhesions are easily separated under the eye. The advantages of the lateral position are now seen, since in Kraske's operation the peritoneum is carried forward, so that it is difficult to reach and incise it. The broad ligaments are ligated in three portions, any infiltrations at their lower borders being readily dissected out. The bladder is next separated. The peritoneal edges are now sutured, including the stumps of the broad ligaments, which are thus fixed extra-peritoneally. The peritoneal cavity is thus closed before the vagina is opened, so that no cancerous or septic matter can enter the abdomen.

The uterine arteries are next ligated, with their vaginal branches if necessary. The ureters can easily be felt and avoided. The vaginal fornix is then opened, and the uterus is removed, the vaginal wound being closed with Lembert sutures, so that the raw edges are turned into the vagina. There remains a conical wound a couple of inches in depth, the apex of which is at the line of peritoneal sutures; this is tamponed lightly with iodoform gauze and the external wound is closed, leaving a small opening at its lower angle for drainage.

The advantages of this method of total extirpation over Hochenegg's are the ease with which Douglas's pouch can be opened, and the fact that the peritoneal cavity is closed before the vagina is incised, while the operation in general is easier and less bloody. It is especially adapted to cases in which the vagina is involved and the uterus is fixed by adhesions, while the broad ligaments are still free from carcinomatous infiltration.

CHANGES IN THE ENDOMETRIUM IN FIBRO-MYOMA OF THE UTERUS.

SEMB (*Archiv für Gynäkologie*, Band xliii., Heft 2) arrives at the following conclusions, based on an examination of twenty-five specimens of fibroid uterus:

1. In the majority of the cases of fibroid uterus the endometrium is simply hypertrophied, showing no evidences of inflammatory changes. This hypertrophy may affect both the glands and the stroma; sometimes it is entirely confined to the glands.

2. Secondary changes may occur in the endometrium, due to the pressure of the tumor, or to inflammation in or around the uterus, in consequence of which hypertrophy may be prevented. The mucosa covering submucous fibro-miomata uniformly undergoes atrophy as the result of continued pressure.

Two theories have been proposed to account for the frequent coexistence of hyperplastic endometritis with fibro-myoma, that of V. Campe and Wyder, in which the hypertrophy of the endometrium is referred to increased congestion caused by the presence of the tumor, and Uter's theory that both conditions are due to a common external irritation, which produces at once hypertrophy of the mucous lining of the uterine cavity and development of the fibroid tumor. The writer favors the latter view, because there appears to be no relation between the degree of hypertrophy of the endometrium and the size of the tumor.

The hemorrhage accompanying uterine fibroids, he believes, is not necessarily due to the hyperplastic endometritis, since it may be quite as profuse

when the mucosa is really atrophied. It is due to several factors—vascular hyperplasia, enlargement of the uterine cavity, the pressure of the tumor upon the uterine veins, accompanying endometritis, etc. From a scientific standpoint, curettage is not to be recommended as a routine practice. Before thoroughly scraping out the uterine cavity, fragments of tissue should be removed for microscopical examination, in order to decide whether the endometrium is in a condition of atrophy or hypertrophy.

It has been stated that the hypertrophy of the endometrium accompanying fibroid tumors predisposes to the development of carcinoma—in fact, Martin has advanced this as an argument for hysterectomy. The writer admits that cancerous degeneration of the hypertrophied mucosa may occur, but it is exceedingly rare, since he noted only one case in his twenty-five, and Schmal and Wyder found none in thirty-eight specimens which they examined. Carcinoma is no more likely to develop in connection with fibroids, he concludes, than in any chronic nutritive disturbance of a mucous membrane. Practically, however, obstinate hemorrhages in a case of uterine fibro-myoma should direct the attention of the gynecologist to the possibility of carcinomatous degeneration and lead him to consider whether total extirpation may not be preferable in the given case to supra-pubic amputation of the uterus.

THE PATHOLOGY OF THE ENDOMETRIUM.

UTER (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxv., Heft 2) has made an exhaustive study of the condition of the uterine mucosa in abortion, gonorrhœa, uterine fibroids, etc. He finds that the hypertrophy observed in fibroid uteri is mostly of the glandular type. In one case in which the hemorrhage was unusually profuse, an examination of the specimen showed that there was general hypertrophy of the interstitial tissue without marked vascular hyperplasia, leading to the inference that the bleeding was probably of the nature of parenchymatous oozing. He thinks that the hypertrophy of the endometrium is the initial change, the fibro-myoma developing secondarily—contrary to the view of Ehrendorfer—which is proved by the fact that if the patient is carefully examined when menorrhagia first appears, no enlargement of the corpus uteri may be noted, but after a certain interval it will sometimes be found that a fibroid tumor is developing.

He has not examined any specimen in which sarcomatous degeneration of the endometrium attended carcinoma of the cervix, as described by Abel and Landau, but he has found either simple glandular hypertrophy or else true adeno-carcinoma. Occasionally a mixed form of carcinoma and sarcoma (carcino-sarcoma) may exist. The distinction between adenoma and carcinoma of the endometrium is not possible clinically; it is better to reject the term "malignant adenoma," and to retain only carcinoma and adeno-carcinoma.

THE TREATMENT OF PELVIC SUPPURATION.

That this important subject continues to receive general attention is evidenced by the following recent articles:

LANDAU (*Berliner klin. Wochenschrift*, September 19, 1892), after discussing at length the various causes of pelvic suppuration, summarizes as follows:

Circumscribed, movable collections of pus are to be reached by celiotomy; diffuse, complicated abscesses by resection of the posterior wall of the uterus, according to the method which he has previously advocated. He opposes Segond's dictum that vaginal hysterectomy is the proper procedure under the latter circumstances. In case of doubt, an explorative abdominal section is justifiable, since the surgeon can at once operate per vaginam if he finds that it is impossible to attack the purulent focus from above.

The same writer concludes a monograph on salpingitis (*Journal de Méd., de Chir., et de Pharmacol.*, tome i., fasc. 3, 1892) with minute directions regarding the method of evacuating a pyosalpinx per vaginam. He prefers incision to puncture. With the patient on her back, the surgeon passes a needle along his finger as a guide and plunges it into the sac, which an assistant depresses from above. An incision is made at the site of the puncture, sufficiently large to admit the index finger. If the tubal sac is adherent it is allowed to empty itself through the incision; if not, its edges are secured to the edges of the vaginal wound by forceps, which are left *in situ* for twenty-four hours, in order to insure adhesion. The forceps also prevent bleeding from the edges. If there is hemorrhage from the walls of the sac it can easily be controlled by a gauze tampon. The incision is devoid of danger, provided that one punctures behind the uterus, and at the sides of the posterior fornix. If the material within the tube is thick and cheesy, it can be removed with the finger, a weak antiseptic solution being used for irrigation. If the sac is large, a T-shaped drainage-tube should be used; otherwise a strip of iodoform gauze. Subsequent irrigation is not only unnecessary after an abscess has been opened, but may be dangerous if an antiseptic is used. The majority of the patients thus treated are cured at the end of six weeks, when, on examination, it will be found that a firm cicatricial cord occupies the site of the former pyosalpinx. There is no advantage in the method proposed by Wiedow, of opening the vaginal fornix as a preliminary measure, and tamponing with iodoform gauze, in order to secure adhesion of the sac which is opened a few days later.

Vaginal salpingotomy, recommended by Bonnet, is not only quite difficult, but is not devoid of danger from infection of the peritoneum. It is not possible to determine the exact situation of the sac as in abdominal section, and an explorative incision through the vagina cannot be closed directly like the abdominal wound, but must be left open, at considerable risk of infection.

Sometimes the surgeon finds on opening the abdomen that extirpation of the pus-tube, even if practicable, would be fraught with too much danger to the patient. In this case three courses are open to him. He can depress the sac to the bottom of Douglas's pouch, and then incise and drain it per vaginam, or resect the wall of the tube, drain it per vaginam, and then suture the opening—a procedure not to be advised. Lastly, if the tubal sac can be approximated to the abdominal wall, it can be united to the median wound, or to a new one in the flank, and drained in that way. If it can be determined beforehand that the sac is adherent to the abdominal wall, a direct incision can be made over it; it is unnecessary to make a counter-opening in the vagina, as it is sufficient to pack the sac with gauze, irrigation being employed only at the time of operation.

At the recent International Congress, SECOND (*La Semaine Méd.*, 1892, No. 47) introduced a discussion on the subject of pelvic suppuration, in which he made a strong plea in favor of vaginal extirpation of the uterus, reporting one hundred and two cases in which he performed the operation, with eleven deaths, nine being due to septic peritonitis. With one exception the patients were entirely cured.

PÉAN, continuing the discussion, claimed that extirpation of the uterus and adnexa by his method (*i. e.*, piecemeal) was preferable to abdominal extirpation for the following reasons: 1. It is easier in simple cases, and much easier in complicated ones. 2. It is more thorough, effecting the complete removal and drainage of purulent foci, without danger of recurrence. 3. It offers a more favorable mode of exit for pus and septic fluids. 4. Through the vaginal incision one can examine perfectly the condition of the adnexa, and preserve organs which are not diseased. 5. The mortality is practically *nil*, and the troublesome sequelæ of abdominal section are absent. 6. Evisceration, which is a positive danger in cœliotomy, is avoided. 7. It is the *only* suitable method of treating complicated and mixed forms of pelvic suppuration.

WILLEMS advocated perineotomy as a method of reaching and opening abscesses in the cul-de-sac. The other French speakers were mainly in favor of hysterectomy, but the English gynecologists were opposed to it.

PÆDIATRICS.

UNDER THE CHARGE OF

LOUIS STARR, M.D.,

OF PHILADELPHIA;

ASSISTED BY

THOMPSON S. WESTCOTT, M.D.,

OF PHILADELPHIA.

DIURETIN IN THE TREATMENT OF SCARLATINAL NEPHRITIS.

DEMME (*Journal de Médecine de Paris*, 1892, No. 20, p. 241) states that diuretin is contra-indicated in infants under one year of age, with whom its administration is often followed by irritation of the gastro-intestinal mucous membrane. To older children, two to five years, he gives 7 to 22 grains daily, increasing this to 45 grains in children from six to ten years old. He has employed this drug in 11 cases: in 4 of which there was anasarca; in 3, mitral insufficiency, with insufficient diuresis, despite the restoration of compensation by digitalis; in 2, chronic peritonitis with ascites; and in 2, pleurisy with effusion. Diuretin he finds to be an efficient diuretic, acting directly upon the epithelium of the kidney. It is still impossible to pronounce upon its influence over the circulation, but it seems to be of little moment. In scarlatinal nephritis it is very energetic, the ascites disappear-

ing more rapidly than under the action of any other diuretic. It is important, however, to prescribe it only after the end of the first stage of the inflammation. The anasarca and ascites following upon mitral lesions should be at first treated by digitalis until compensation has been secured, and then submitted to diuretin. Under these conditions all dropsy rapidly disappears.

A TYPICAL CASE OF ARTICULAR GOUT IN A CHILD.

It is generally taught that childhood, and especially the female sex, confer immunity from gout, but occasionally cases are encountered. Gairdner, Scudamore, and Garrod have reported such instances. Trousseau mentions one case, and Lécorché cites that of a little girl of eleven years, in whom the classic involvement of the metatarso-phalangeal joint of the great toe was exemplified; no hereditary antecedents were discovered except in a great-uncle, who was gouty. MARBOUX, of Contrexéville (*Le Mercredi Médical*, 1892, No. 47, p. 557) gives notes of such a case. The patient was a girl of eleven years, of habitual good health, subject neither to migraine, abdominal pains, cutaneous eruptions, nor presenting any evidence of approaching menstruation. After a few hours' malaise, with some pain in the throat and tendency to constantly swallow, she was seized in the afternoon with pain in the plantar aspect of the right great toe, soon followed by dorsal pain and redness about the joint, with enlargement and prominence of the veins. There was no fever; the throat presented nothing abnormal. The father had suffered once from a slight attack of painful swelling of the same joint about eighteen months previously, but had attributed it to wearing tight boots. The child's attack subsided rapidly under a sedative ointment, but two days later suffered a relapse, with involvement of the same joint of the other foot. A rapid cure was effected under the persistent use of salicylate of sodium, three grammes daily.

URINARY INFECTION BY THE BACTERIUM COLI COMMUNE.

LOUIS GUINON (*Revue mens. des Maladies de l'Enfance*, December, 1892, p. 573) reports an interesting case of this kind. The patient was a little girl of eight years, who was brought into the hospital with well-marked symptoms of typhoid fever. After the evolution of a rather mild attack of this disease, and during the convalescence, retention of urine occurred, necessitating catheterism for four days. This was immediately succeeded by cystitis, and seven days later the right kidney became the seat of a pyelitis. This was attended by spontaneous pain over the kidney, excessive sensitiveness of the anterior aspect of the flank, and by increase of the fever, which exhibited all the characteristics of a suppurative process. The left kidney was attacked fifteen days later, so that about a month after the onset of the cystitis the whole urinary tract was affected. Benzoate of soda (as much as 75 grains a day), salol (30 grains), with antipyrine, naphthol, and lavage of the bladder with boric acid solution, proved ineffectual, although a mild intoxication was occasioned by the salol. The biborate of soda in dose of 15 grains in a julep was then given, with completely successful results, after a long course of treatment lasting several months.

The bacteriological examinations were made by the author and MM.

Achard and Renaut, and showed pure cultures of the bacterium coli commune. This microbe was distinguished from the bacillus of Eberth and the bacterium lactis aërogenes by the fact that it provoked the fermentation of milk, and supplanted upon culture media the bacterium lactis aërogenes.

Inoculation experiments were also made. Three animals were inoculated with a bouillon culture of the third day. A guinea-pig which received a cubic centimetre of this culture within the peritoneum, died in thirty-six hours with peritonitis, but a rabbit and a second guinea-pig, which received the same dose, the first in a vein of the ear, and the second in the subcutaneous tissue of the abdomen, both survived, the guinea-pig showing less serious constitutional disturbance. The identity of the bacillus of urinary infection (described successively by Clado under the name of *bactérie septique*, and by Albarran and Hallé under that of *bactérie pyogène*) with the bacterium coli commune has been demonstrated by Morelle, Achard and Renaut, and Krogius. These observers have found it in a case of nephritis in a pregnant woman; in miliary renal abscesses in an old man; and in a case of calculous pyelo-nephritis. The bacterium isolated by Achard and Renaut failed to provoke peritonitis in guinea-pigs, even in dose of several cubic centimetres of pure culture, until lactose and carbonate of calcium were added to the liquid so as to produce an acid fermentation. The coli bacillus obtained in the author's case was much more virulent.

More recently Krogius has reported the existence in certain urinary infections of the bacterium lactis aërogenes, which he considers as a variety of the coli bacillus. But Achard and Renaut seem to have demonstrated the distinctness of the two varieties.

THE MORBILLOUS FORM OF RUBELLA.

H. GILLET (*Revue mens. des Maladies de l'Enfance*, January and February, 1893, pp. 1 and 71) concludes a study under this title with the following sentences:

Rubella, which is rarer in France than in more northern countries, appears there especially in the lighter form, often taking on the morbillous type. This attenuated form, which is without catarrh, constitutes a variety and not a separate malady. The eruption, even in this form, can, very exceptionally, be hemorrhagic, without either affecting the course of the disease or increasing the gravity of its prognosis. There is often around the papules a white zone of cutaneous anæmia.

Besides this form of rubella there exists a roseola which is not an exanthematous fever, but only an ordinary cutaneous efflorescence. Prophylactic measures should extend to rubella in all its forms.

SUPPURATIVE PERIOSTITIS IN A CASE OF BRONCHO-PNEUMONIA.

SCHLOEPFER (*Correspondenzblatt für Schweizer Aerzte*, 1892, No. 12, p. 380) gives the notes of a case of a child of five and a half years, of tubercular antecedents, who, at the age of two years, had sustained a traumatism of the right side of the head; the wound had been slow in healing and left a depressed cicatrix. At the time of observation he passed through an attack of broncho-pneumonia, but with the beginning of decline of the fever after the

ninth day an abscess formed at the site of the old cicatrix, and when opened proved to be beneath the periosteum. A careful examination of the pus showed the presence of the staphylococcus aureus and albus.

There had been no external lesion at this site, nor any trace of eczema. The infection had, therefore, been brought by the blood stream, and the following mechanism is suggested by the author. The child had had a pneumonia dependent upon the pneumococcus of Fränkel-Weichselbaum; in the course of this disease there occurred a secondary infection by staphylococci, which alone, because of the short existence of the pneumococcus, had reached the blood and formed a metastatic abscess at the site of the old cicatrix, which, in this case, was the *locus minoris resistentiæ* of the organism.

A SECOND ATTACK OF MEASLES WITHIN TEN DAYS.

STRENG (*Deutsche medicinische Wochenschrift*, 1892, No. 48, p. 1085) reports a case of measles with *récidive*, observed in a girl of six years, under the following conditions:

The child was brought to the hospital with a full eruption of measles and a temperature of 99.8°. The nature of the eruption is said to have been unmistakable and no doubt of the diagnosis was entertained. On the following day the temperature became normal, and the eruption began to fade, convalescence being rapidly established. But on the tenth day after entering the hospital the temperature rose to 103° and two days later the child was again covered with a measles rash more intense than the first. At the same time intense coryza, conjunctivitis, and bronchial catarrh were present. Critical defervescence occurred at the end of four days, and the child recovered as completely as from the first attack.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

JOHN SLADE ELY, M.D.,

PROFESSOR OF PATHOLOGY IN THE WOMAN'S MEDICAL COLLEGE OF THE NEW YORK INFIRMARY;
ASSISTANT IN PATHOLOGY IN THE COLLEGE OF PHYSICIANS AND SURGEONS; PATHOLOGIST
TO BELLEVUE HOSPITAL; AND ASSISTANT PHYSICIAN TO THE ROOSEVELT HOSPITAL
OUT-PATIENT DEPARTMENT.

LEUCOCYTHÆMIA.

ONE of the most recent and perhaps the best discussion of the pathology of leucocythæmia is presented by ROBERT MUIR in the *Journal of Pathology and Bacteriology* (October, 1892, vol. i., No. 2, p. 123). The literature of the subject has been thoroughly gone over, and the conclusions derived from its review are substantiated by valuable observations by the author in the study of seven cases of the disease.

Muir considers all cases of leucocythæmia as belonging to one of two types, distinct in their origin, and in many of their characters, and designated by him as the "spleno-medullary" and "lymphatic" types of the disease.

In the "spleno-medullary" form of leucocythæmia the spleen is enormously enlarged, while the lymphatic glands are unaffected, and very marked and characteristic changes occur in the blood. Eosinophile cells, large uninucleated corpuscles, different from any found in normal blood, and nucleated red corpuscles are present, and the ordinary multinucleated leucocytes of the blood are increased in number.

The eosinophile cells are often very abundant. Their apparent identity with the ordinary eosinophile cells of the marrow of the bones is shown, and this, coupled with the fact that they are larger, more irregular in shape, and differently nucleated from the ordinary eosinophile cell occasionally found in the blood in other conditions, is believed to point unmistakably to their derivation from the bone-marrow.

The large uninucleated leucocytes, which often attain a diameter quite double that of the smaller uninucleated leucocytes of the normal blood, are a striking feature of this form of the disease. They possess a single large nucleus, sometimes indented at one side, or horseshoe-shaped, but never showing the complicated multipartite character seen in many of the ordinary leucocytes. The nucleus is comparatively poor in chromatin distributed in a very open intra-nuclear network. When examined on the warm stage these cells were found to be devoid of any amœboid movement, while the smaller multinucleated cells in their immediate neighborhood were very active. These large cells are never present in normal blood, but occur in the spleno-medullary type of leucocythæmia often in very large numbers, in one of Muir's cases constituting more than 50 per cent. of all the colorless cells. The similarity of these cells to the so-called "marrow cells" of bone is pointed out, and a careful comparison of the two leads Muir to the belief that they are identical, and that those seen in the blood are in reality derived from the marrow. In the marrow these cells may be seen, in this form of leucocythæmia, in process of indirect cell-division, and Muir has also been able to see mitotic figures in the cells in the blood.

The origin and significance of the nucleated red corpuscle is as yet uncertain. It is known to be present in the blood in cases of pronounced anæmia. Their presence in the blood in the spleno-medullary type of leucocythæmia cannot, however, be attributed to this condition, as the anæmia is, as a rule, so slight as to be insignificant. They are usually present in considerable numbers, being more numerous in this form of leucocythæmia than in any other condition.

The ordinary multinucleated leucocytes, though increased in number, present their usual characters unaltered. The small uninucleated forms, or "lymphocytes," show no increase.

Considerable variation of the numbers of the corpuscles in the blood was noticed at different times, but in no case were the abnormal elements absent. In one case, in the course of four months, the number of leucocytes diminished from 250,000 per c.mm. to the normal, but the same abnormal elements—large uninucleated corpuscles, eosinophile cells, and nucleated red corpuscles—were still present.

In this form of leucocythæmia the spleen is enormously enlarged, while the lymphatic glands are unaffected.

Muir believes this type of the disease to be dependent upon a pathological condition of the bone-marrow. All the abnormal elements of the blood characterizing it are present in the marrow under normal conditions, and we have only to suppose their abnormal proliferation there and their subsequent escape into the blood and accumulation in the spleen pulp to explain the observed phenomena. It is probable, also, that division of some of the marrow cells occurs after their entrance into the blood and in the spleen, as mitotic figures have been observed in the corpuscles in both these locations, though they are not so numerous as in the bone-marrow.

The essential change in the blood in the "lymphatic" form of leucocythæmia is an enormous increase in the number of the uninucleated leucocytes normally present. These cells have a diameter of about $8\ \mu$, and are characterized by a very narrow rim of protoplasm around a distinct nucleus, rich in chromatin and staining deeply. In Muir's cases there was little or no increase of multinucleated leucocytes; eosinophile cells, nucleated red corpuscles, and "marrow cells" were either absent or exceedingly scanty. Mitotic figures were not found in the blood. Anæmia was a pronounced feature. The lymphatic glands and, in some cases, the spleen were enlarged; in one case there was diffuse infiltration of the mediastinal connective tissue. The most prominent post-mortem change was a diffuse infiltration of the spleen, lymph-nodes, marrow, and various organs of the body with the same small uninucleated cells so abundant in the blood.

The determination of the origin of the disease in this form of leucocythæmia presents much greater difficulty than in the "spleno-medullary" type, and must, for the present, remain uncertain.

In conclusion, Muir states his belief that "the changes found in leucocythæmia cannot be explained on any other theory than that of an excessive and indefinite proliferation of a certain kind of cell, in its nature resembling that seen in the growth of many tumors." In many cases, at least, this cell is believed to be derived from the large uninucleated cell of the marrow of bone.

Note to Contributors.—All contributions intended for insertion in the Original Department of this Journal are only received *with the distinct understanding that they are contributed exclusively to this Journal.*

Contributions from the Continent of Europe and written in the French, German or Italian language, if on examination they are found desirable for this Journal, will be translated at its expense.

Liberal compensation is made for articles used. A limited number of reprints in pamphlet form, if desired, will be furnished to authors in lieu of compensation, *provided the request for them be written on the manuscript.*

All communications should be addressed to

DR. EDWARD P. DAVIS, 250 South 21st Street, Philadelphia, U. S. A.

Or

DR. HECTOR MACKENZIE, 77 Lambeth Palace Road, S. E., London, Eng.

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES.

MAY, 1893.

THE TREATMENT OF MALIGNANT TUMORS BY REPEATED
INOCULATIONS OF ERYSIPELAS: WITH A REPORT OF
TEN ORIGINAL CASES.¹

BY WILLIAM B. COLEY, M.D.,

ASSISTANT SURGEON TO THE HOSPITAL FOR RUPTURED AND CRIPPLED; INSTRUCTOR IN SURGERY
IN THE POST-GRADUATE MEDICAL SCHOOL, NEW YORK.

IN a paper published in the *Annals of Surgery*, in September, 1891, entitled "A Contribution to the Knowledge of Sarcoma," I referred at some length to the curative effect of erysipelas upon sarcoma, reporting the results of inoculation in three cases recently treated by myself.

At the time I began my investigations in this most interesting subject I had not read of Fehleisen's experiments in Germany. While collecting the cases of sarcoma treated at the New York Hospital during the past fifteen years, I found a case that, to my mind, had convincing evidence that erysipelas possessed a powerful curative principle antagonistic to sarcoma. (Fig. 1.)

Whether or not this principle could be isolated or utilized in the practical treatment of sarcoma was quite another question, yet one of sufficient interest and importance to lead me at once into making a thorough study of the subject.

Before going further it might be well to give a few points of interest in the case I have mentioned:

This was one of round-celled sarcoma of the neck, occurring in a German, aged thirty-one years. Five operations had been performed

¹ Read (in part) before the Surgical Section of the New York Academy of Medicine, December 12, 1892.

by Dr. W. T. Bull within a space of three years. At the last operation it was found impossible to remove all of the tumor, and the case was considered hopeless.

Two weeks after the operation a severe attack of erysipelas occurred, followed by a second attack shortly after the first had subsided.

During the progress of the erysipelas the remains of the sarcoma entirely disappeared, the wound rapidly healed, and the patient was seen both by Dr. Bull and myself seven years afterward, at which time the photograph appended was taken.

FIG. 1.



Round-celled sarcoma of neck, cured by erysipelas. Photograph taken seven years after. (BULL's case.)

The diagnosis in this case had been repeatedly confirmed by well-known pathologists, and there was no possibility of attributing the cure to any other cause than the erysipelas.

If erysipelas, a disease produced by a specific organism, could cure a case of undoubted sarcoma when occurring accidentally, it seemed fair to presume that the same benign action would be exerted in a similar case if erysipelas could be artificially produced.

Was it possible to produce an artificial erysipelas, and if so, what were its dangers and limitations? These were questions that immediately arose, and the answers to them, crude and imperfect though they be, I shall now endeavor to present.

In the course of a careful review of the literature of the subject I found that, aside from a vague and indefinite impression that tumors of doubtful character had been known to disappear after an attack of erysipelas, there was a certain amount of actual evidence. This evidence, though made up of facts few in number and scattered, was nevertheless strong.

It was made infinitely stronger by the publication of Fehleisen's paper in 1883, demonstrating the origin of erysipelas from a specific germ, and giving the results of a series of experiments upon five cases of malignant disease.

Having satisfied myself that the mortality from erysipelas uncomplicated was very small, I determined to inoculate the first case of inoperable sarcoma that should present itself.

I had but a short time to wait, and on May 2, 1891, I inoculated a case of sarcoma of the neck and tonsil (recurrent), which was kindly referred to me by Dr. Bull:

The patient was an Italian, thirty-five years of age, operated upon previously in Rome by Professor Durante, and in April, 1891, by Dr. Bull, at the New York Hospital. At the latter operation the growth was found too extensive to remove. At the time of my first inoculation the tumor of the neck was growing, and the right tonsil was the seat of a tumor the size of a hen's egg and almost completely blocking up the pharynx. Solid food could not be taken, and liquids frequently regurgitated through the nose.

The patient's condition was very bad. He was emaciated and cachectic. The dangers attendant upon an attack of erysipelas were explained to him, and in view of the hopelessness of his condition and the impossibility of obtaining further surgical relief, he consented to erysipelas inoculation.

The details of the earlier treatment are given in my former paper, and I will not repeat them here; suffice it to say that the inoculations were made by injecting small quantities of bouillon cultures ($\frac{1}{2}$ to 2 grammes) into the tumor itself, scarification (Fehleisen's method) having proved unsatisfactory.

The inoculations were continued at short intervals during May and a part of June. Slight local and constitutional reaction followed the inoculations, the tumor of the neck diminished in size, and the general condition improved. The tonsil tumor was also smaller and the voice much better.

During August and September the treatment was discontinued, and the tumors at once began to increase in size and the general condition to deteriorate.

October 1st they had reached their former size, and the patient's condition was little different from that at the time the inoculations were begun. At this time I succeeded in getting a culture of streptococcus erysipelatis kindly brought me by Dr. Farquhar Ferguson direct from Koch's laboratory, and I decided to make a further trial.

Five decigrammes of a fresh culture were injected into the tumor substance. Up to this time he had had no attack of true erysipelas, the

slight local reaction passing away in from twenty-four to forty-eight hours, and the temperature thereupon becoming normal.

Within an hour he had severe pain, nausea, vomiting, and a chill lasting forty minutes. His temperature rose to 105° , and within twelve hours a patch of perfectly typical erysipelas the size of the palm of the hand appeared upon the neck. This gradually extended over the face and head, and met upon the opposite side.

The disease ran the usual course, and I made little effort to check it, save to apply some ichthyol upon the forehead to prevent its extending to the scalp (which, I may add, it failed to do). At the end of ten days the pulse and temperature had become normal. The tumor of the neck began to break down on the second day, and discharged until the end of the attack. The discharge was not pus, but resembled the caseous material of a tubercular gland. The outlying nodules disappeared by absorption without breaking down. The tonsil tumor was smaller, but the diminution in size was not great. At the end of two weeks the tumor of the neck had disappeared, and there remained only the induration from the previous operations.

The appetite began soon to improve and he gained rapidly in flesh and strength. There has been up to the present time (twenty months) no return of the tumor in the neck, and although the tonsil tumor has remained about the same in size, its malignant character must have been greatly modified, as sarcoma of the tonsil is known to be rapidly fatal.

The patient's general condition at present (nearly two years) is very good, although he is suffering from a confirmed morphine habit which he had contracted previous to the inoculations.

My second and third cases were bone sarcomata (periosteal), one of the lower end of the femur and the other of the upper dorsal spine. These two cases are, as far as I have been able to ascertain, the only cases of bone tumors where inoculation has been tried; although Dr. Gerster reported at the Surgical Society, a year ago, a most remarkable case of sarcoma of the lower end of the femur, with amputation at the trochanter minor, followed by rapid recurrence in the stump. An attack of accidental erysipelas ensued a few weeks later, whereupon the tumor entirely disappeared, and the patient was seen by Dr. Gerster three years afterward, free from recurrence.

The results in my two cases, although temporarily beneficial, were not successful from a curative point of view. It is worthy of note, however, that in neither case was erysipelas obtained. The reaction, both local and constitutional, resembled exactly that which occurred in the early treatment of the first case; and the slight improvement compared with that which I have observed after true attacks of erysipelas, has led me to regard the presence of the streptococci themselves as a very important factor in destroying the neoplasm. My own experiments in the use of sterilized cultures of erysipelas, as well as the recent researches of Stronck, still further confirm this view.

My fourth case was a very large inoperable carcinoma of the face involving the entire left side and adherent to the bony structure. The patient was seventy-five years of age and had been treated at the New York Hospital for several weeks with pyoktanin injections (150) without any improvement.

I inoculated him in May, 1891, with a bouillon culture of the same stock that I had used in my first case. Slight local and considerable constitutional reaction followed, the temperature rising to $102\frac{1}{2}^{\circ}$ and accompanied by some nausea and vomiting. The reaction occurred ten hours after inoculation, and subsided in forty-eight hours. The inoculations were discontinued after three injections, owing to inability to treat the patient at his home or to obtain a suitable place in a hospital.

The effect of the inoculations upon the tumor was not apparent beyond a slight softening. In this case, as in the two preceding ones, there was no real erysipelas produced.

CASE V. Very large sarcoma of the back; recurrent; inoculation with erysipelas; failure to produce erysipelas.—The patient was a man aged forty-five, a carpenter by trade, without history of hereditary taint, and who had always been well until three years before, when, without any injury, a swelling appeared over the right scapula. At the end of one and a half years it had reached the size of a cocoanut, and was removed at St. Luke's Hospital by Dr. Francis H. Markoe.

Recurrence took place four months later, but the patient delayed coming back to the hospital until February, 1892, at which time the tumor had become inoperable. It occupied the entire mid-scapular region, and its semi-circumference vertically and transversely was $17\frac{1}{2}$ and $18\frac{1}{2}$ inches.

Through the kindness of Dr. L. Bolton Bangs and Dr. Markoe, the case was referred to me with a view of trying erysipelas.

The cultures which I had used the previous fall had become too attenuated and I was unable to obtain any fresh ones. The patient was kept two weeks in the erysipelas ward of Bellevue Hospital, and although surrounded by patients in all stages of erysipelas, and inoculated repeatedly by direct means, it was found impossible to produce erysipelas, and he was discharged.

*CASE VI. Large sarcoma of back and groin; operation (groin tumor), recurrence in four weeks; erysipelas inoculation; entire disappearance of both tumors; recurrence three months later; second inoculation; second disappearance; recurrence in back, not in groin.*¹—The patient, a German, forty-six years of age, cigar-maker, with a good family and personal history, applied at the Hospital for Ruptured and Crippled early in January, 1891, for treatment for a swelling in the right groin.

At that time there was a tumor the size of a goose-egg—hard, slightly nodular, deeply seated in the region of the inguinal glands without any signs of an inflammatory nature. Hernia could easily be excluded, and the usual causes of an adenitis were absent. The patient had first noticed the tumor five months before; it had slowly but steadily increased in size, and was slightly painful. I made the diagnosis of malignant disease, in spite of the fact that careful questioning failed to elicit any history of a primary tumor elsewhere. A few days later I operated

¹ As this is, perhaps, the most interesting and suggestive of my cases, I give it somewhat in detail.

upon the tumor of the groin, at the Post-Graduate Hospital. The tumor was found to consist principally of degenerated glandular tissue, but no pus was present. The microscopical examination was unsatisfactory. While putting on a spica bandage I discovered a large flat tumor in the lumbar region of the back, measuring six inches by four, elliptical in shape, and projecting from the normal surface about one-half to one-inch. It was very hard and nodular, presenting numerous tuberosities. Its color varied from a bright red to a plum color. It was freely movable, and was evidently situated entirely in the skin and subcutaneous tissue. The patient stated that it had been there five years, but having caused him little inconvenience, he had paid slight attention to it. In

FIG. 2.



Sarcoma of back and groin. Entire disappearance after erysipelas inoculation.
(COLEY.)

fact, his knowledge of pathology was so crude that he had regarded it as "simple hemorrhoids," his idea of the latter disease having been gained from an afflicted friend.

Other than an indefinite history of injury in the army in 1870, no cause could be found for the tumor.

Soon after leaving the hospital Dr. Geo. H. Fox kindly saw the case with me, and his diagnosis was sarcoma of the skin. A photograph was taken at the time, February, 1891, shown in the accompanying cut.

Shortly afterward I removed two sections of the tumor under cocaine, for microscopical examination, and the diagnosis of sarcoma was confirmed by the careful examination of Dr. Farquhar Ferguson, the pathologist of the New York Hospital. At this date, February, 22, 1892, the tumor of the groin had already recurred and was growing rapidly. The tumor of the back was also increasing in size. In view of the rapid recurrence in the groin and the large size of the tumor of the back the patient was advised, both by Dr. Bull and myself, to have erysipelas tried. After some deliberation he consented, and on the 21st of April, 1892, I began inoculations.

I inoculated him, as in the preceding case, with bouillon culture injected into the tumor itself, using in this case a freshly prepared culture, kindly furnished me by Dr. T. M. Cheesman, of the laboratory of the College of Physicians and Surgeons of this city, from material which I had obtained from a recent case of erysipelas.

During the first three weeks of treatment the inoculations were made at intervals of two to three days. Well-marked constitutional reaction followed, accompanied by slight local redness at site of puncture; the condition returning to normal at the end of twenty-four to forty-eight hours. The effect on the tumor was a perceptible decrease in size; there was no formation of pus, nor was there any breaking down of the tumor tissue. At the beginning of the fourth week I used a new culture sent me from the laboratory of the Johns Hopkins Hospital. The first injection of 7 decigrammes produced a reaction quite similar to that obtained from the other culture. The second, of $1\frac{1}{2}$ grammes, two days later, produced a perfectly typical attack of erysipelas, both in the back and groin (injections having been made in both places).

Four hours after the inoculation the patient had a very severe chill, with nausea and vomiting and marked prostration. The temperature rose to $105\frac{1}{2}^{\circ}$, and the pulse to 130° . The subsequent history was that of a typical but severe attack of erysipelas. The disease did not extend over a very large area, although no measures were taken to check it.

From the beginning of the attack the change that took place in the tumor was nothing short of marvellous. It lost its lustre and color, and had shrunk visibly in size within twenty-four hours. Several sinuses formed the second day and discharged necrosed tumor tissue. A few days later the tumor of the groin, which was about the size of a goose-egg, and very hard, when the inoculations were begun, broke down and discharged a large amount of similar material.

This continued for two weeks, after which time the sinuses gradually closed. The most projecting portion of the tumor of the back ulcerated over an area one and a-half inches in diameter, but this rapidly healed.

Three weeks from the date of the attack both tumors had *entirely disappeared*, and there was scarcely any induration remaining. His recovery from the erysipelas was retarded somewhat by an unusual complication.

During the early part of the inoculation treatment (before the attack of erysipelas) he received a blow upon the chest while scuffling with another patient. Four weeks later, when recovering from the erysipelas, he began to feel pain in the region of the injury, and soon after a diffuse swelling appeared.

The temperature ranged from 101° to $102\frac{1}{2}^{\circ}$ for a week, and the swelling gradually increased in size. There was no redness, but fluctuation could be detected, and a needle introduced in the mammillary line between the fourth and fifth ribs drew thick creamy pus.

The following day I made an incision under cocaine anæsthesia, and found a large abscess connecting with the pleural cavity and lung itself, as shown by the passage of air through the wound, and the fact that the patient for several days (before and after operation) expectorated a large amount of purulent material, exactly like that found in the abscess. About ten ounces of pus was evacuated, the cavity washed out, and a drainage-tube inserted. The tube was withdrawn at the end of ten days, and the sinus had entirely closed two weeks later.

The patient's general condition improved rapidly. He gained seven pounds in twelve days. There was no recurrence of the tumors until July 1st, when a small nodule, the size of a pea, appeared at the site of former tumor in the back.

July 18th there were six small nodules within an area of from two to four inches, the largest of which was seven-eighths of an inch in diameter.

July 3d inoculations were begun again, but no reaction was obtained until July 19th, when one gramme of a culture sixteen days old, fifth generation, produced a chill eight hours later, followed by a rise of temperature to $103\frac{1}{2}^{\circ}$. After two days a small sinus formed and necrosed tumor tissue came away.

One nodule, which was seven-eighths of an inch in diameter when the injection was made, disappeared at this time, but the effect on the rest of the nodules was only a temporary check. They grew rapidly afterward, and by October 1st had coalesced, forming a flat tumor similar to the original one, and measuring two and a half by four and a half inches. The nodules had also reappeared in the right groin. The patient was sent to the New York Cancer Hospital Cottage in order to have the erysipelas inoculations more systematically carried out. He was given injections of $\frac{1}{2}$ to 2 grammes (of bouillon culture of the same stock as that used in the spring) every other day for two weeks. I could not produce an erysipelas, and the slight reactions failed to diminish the size of the tumor, although they checked its growth.

At this point I succeeded in getting a new and virulent culture from a case of uncomplicated facial erysipelas, seen on the day of its development, before treatment.

The fact that the temperature was $106\frac{1}{2}^{\circ}$ the first day of the disease made me hopeful that could I succeed in isolating them, the streptococci would be virulent. I made cultivations upon five tubes of agar-agar, and succeeded in getting pure cultures in two of them. These I first tested upon rabbits, and then proceeded to use them in the case I am describing.

The first injection was made October 23, 1892; 7 decigrammes, second generation, six days old, of a bouillon culture were injected into the tumor. A severe chill occurred three hours later, and the temperature rose to $104\frac{1}{2}^{\circ}$. October 24th the temperature had fallen to $101\frac{1}{2}^{\circ}$, and as there was no evidence of erysipelas in the vicinity of the inoculation a second injection of 7 decigrammes was given October 25th. The temperature remained normal. November 5th, 2 grammes of a culture ten days old (second generation) was followed by a severe reaction, and a temperature of $104\frac{1}{2}^{\circ}$, which, however, fell to 100° in six hours.

From October 23d to November 14th the inoculations were kept up at short intervals, and followed by the results just described. The tumor was slightly diminished in size, but grew rapidly as soon as the inoculations were stopped.

November 14th. Careful measurements were taken of the tumor of the back, and were as follows: 5 by $3\frac{1}{2}$ inches, with $\frac{1}{2}$ by $\frac{3}{4}$ inch projection.

An injection of $1\frac{1}{2}$ grammes two weeks old, of exactly the same culture tube as that used at the previous inoculation, was followed by a chill fourteen hours after, and a rise of temperature to 105° . A patch of

erysipelas soon appeared (some distance from the point of inoculation), and the disease ran a typical course, lasting a week.

The area of erysipelas never exceeded eighteen inches in diameter, and was chiefly confined to the right buttock. No attempt was made to limit it. The temperature, after the first day, ranged between 101° and $103\frac{1}{2}^{\circ}$, and at no time was the condition serious.

The changes produced by this attack of erysipelas were no less remarkable than those that occurred during the former. Within twelve hours of the onset the tumor became dull and lustreless, and began to break down and soften.

Four or five sinuses formed, from which degenerated tissue escaped during the entire course of the erysipelas. At the end of thirty-six hours the tumor had diminished one-half, and at the end of a week there was nothing left save slight thickening and induration at the site of the tumor. The nodules in the groin had entirely disappeared.

Two weeks later (December 1, 1892), the induration in the back had perceptibly increased, and several suspicious-looking places had appeared on the surface, showing that the tumor had not been entirely destroyed.

December 7th. The nodules had increased rapidly in size, and injection of 1 gramme, second generation, twenty days old, was given.

Scarification and multiple punctures were also tried on the normal skin near the tumor.

The inoculation was done at 10.30 A.M. At 1 P.M. there was malaise and headache, nausea and vomiting at 2 P.M., and at 3 P.M. the temperature was 105° . At 8 P.M. it was still $105\frac{2}{10}^{\circ}$, and pulse 140. It had fallen to $101\frac{1}{2}^{\circ}$ the following morning (December 8th), and there was no evidence of a new attack of erysipelas, although the tumor was smaller.¹

CASE VII. Sarcoma of the breast; seven recurrences; inoculation of erysipelas; partial disappearance of the tumor; recurrence; operation; inoculation repeated. (Still under treatment.)—F. P., thirty-eight years of age, single; first noticed a tumor in the left breast five years ago. Her family and personal history was good, and she had no recollection of having injured the breast.

It grew steadily, and was somewhat painful. Several physicians and surgeons were consulted, and all considered it a cystic adenoma, and advised letting it alone.

In September, 1889, it showed undoubted features of malignancy, and was removed by Dr. Webber, of Cleveland, Ohio. It recurred four months later, and in five weeks had reached the size of an orange. The subsequent history up to the time I first saw her (June 1, 1892) was simply a repetition of operation and recurrence.

The seventh operation was performed by Dr. Bull, at St. Luke's Hospital, in April, 1892, at which time a large tumor was removed. Recurrence took place before the wound had healed, and June 1st the growths had reached the size indicated in the figure. (Fig. 3.)

In view of the hopelessness of benefit from further operation, the erysipelatous treatment was suggested to her by Dr. Bull, and she decided to have it tried. She was transferred to the New York Cancer Hospital Cottage, which was kindly placed at our disposal by the board,

¹ A week later, a spontaneous attack of erysipelas occurred in the same region as the last; and during the three weeks following, two similar attacks occurred, though milder in type.

and June 2, 1892, the first inoculation was made by Dr. Bull and myself.

There were three separate tumors present in the left mammary region, $1\frac{1}{2}$ inches, 2 inches, and $\frac{1}{4}$ inch in diameter, respectively.

The two larger ones were fixed to the chest-wall.

One and a half grammes of a culture five weeks old was injected into each of the two larger tumors, at 9 P.M., June 2, 1892. Temperature before injection was $98\frac{1}{2}^{\circ}$. Two hours later there was intense pain, followed by a chill lasting more than an hour. At 3 A.M. the temperature had risen to 104.2° . The patient had severe vomiting and purging.

FIG. 3.



Recurrent sarcoma of breast. (COLEY.)

The next day, June 3d, there was an erysipelatous blush, extending seven inches across toward the right side. The disease ran the usual course, and at the end of a week the temperature had fallen to normal. The tumors broke down on the second day and discharged degenerated tissue, as in the preceding cases. The tumors decreased very much in size, one of them almost disappearing. They soon began to grow again, and others appeared in neighboring parts.

The inoculations were repeated, but a second attack of erysipelas was not produced until July 2d.

June 30th. At this time the lower tumor was scraped out with a sharp spoon under cocaine, and ten minims of culture, two weeks old, put into the wound. Twenty-six hours later she vomited and had chilly sensations, but no distinct chill. The temperature was 99.4° , and steadily rose until 12 M., July 4th, when it had reached 104° . It remained high for several days, reaching 105° in two days.

The erysipelas spread over a considerable portion of the back and down the left arm to the hand.

The temperature did not fall to normal until the eleventh day of the disease.

Although all of the nodules were diminished in size and some even disappeared, the check proved but temporary, and they soon began to increase in size.

Although the last attack of erysipelas was a severe one, the recovery was very rapid, and the general condition was soon as good, if not better, than before the attack.

The tumors grew very rapidly and were exceedingly painful. In October there were three distinct tumors, the largest of which was as large as a cocoanut, without ulceration, very soft, almost cystic in feel. There was a second tumor, as large as a large orange, a fungoid mass with a small pedicle.

Both of these were removed by operation in the latter part of October, and the large areas left uncovered by skin healed with remarkable rapidity.

She has gained considerable weight and strength, and there now remains a tumor the size of half an orange, which has been treated by repeated inoculation the past two weeks. The growth has been checked, but the tumor has not decreased in size.

I have not yet been able to produce a third attack of erysipelas in this case.

The general condition is better than last June, and there is no evidence of general dissemination.¹

CASE VIII. Recurrent carcinoma of the breast; repeated inoculations of erysipelas; diminution in size of tumor; improvement temporary.—The tumor occurred in a woman forty years of age, who was married and had had children. Predisposing causes were to be found in a family history of cancer, and also in a personal history of mastitis. The tumor was first noticed one and a half years before. Four operations had been performed within less than a year. The tumor at the time of inoculation was the size of a goose-egg, 5 by 3 inches, and occupied the upper part of the region of the left breast. The growth was markedly protuberant and ulcerated over an area the size of a silver half-dollar. A thin, serous discharge, very profuse, necessitated frequent dressings. There was also a hard tumor, the size of an egg, adherent to the skin on the right breast, which was unmistakably carcinoma.

Inoculations were begun August 1, 1892, and continued at short intervals for two months. Moderate constitutional reactions followed the injections, and there was partial degeneration of the tumor, and considerable diminution in its size. The general condition of the patient was perfect, and not perceptibly the worse from the treatment. The reaction usually passed away in twenty-four to forty-eight hours, and the patient was able to be up and out most of the time. I did not succeed in producing a true attack of erysipelas, although I used the same cultures as in the preceding case.

The inoculations were discontinued in the early part of October, and the tumor began soon to increase in size.

CASE IX. Recurrent carcinoma of the cervical glands; repeated inoculations; partial degeneration of tumor.—The patient was a man, fifty-five

¹ March 8, 1893. The patient's general condition is about the same. She is being treated with injections of the toxic products of erysipelas.

years old, operated upon by Dr. Frank Hartley for a large carcinoma of the neck in July, 1892, with rapid recurrence following.

He was treated for three weeks in October, 1892, at the New York Cancer Hospital Cottage, with repeated inoculations of a pure culture of erysipelas.

Marked reaction followed, but erysipelas was never produced.

The larger tumor (small egg) broke down, and for several days there was considerable discharge of degenerated tissue, and the tumor decreased in size about one-third. Failing to produce erysipelas, I advised further operation with a view of trying the erysipelas from new virus in the event of recurrence.

CASE X. *Large carcinoma of inguinal glands following amputation of carcinomatous penis one year before; repeated inoculations; temporary improvement.*—The history of this case, as far as the erysipelas is concerned, is almost exactly parallel to the one just described. The tumor was the size of an orange, in the right inguinal region. The patient was seventy-five years of age, and very feeble, having chronic bronchitis and a weak heart. I did not succeed in giving him erysipelas, yet partial degeneration of the tumor followed the repeated injections of the streptococci.

The treatment was discontinued, owing partly to his weak condition and to the attenuated condition of the virus.

In addition to these cases of my own, I have collected and tabulated all the reported cases of carcinoma and sarcoma in which erysipelas, either spontaneous or artificial, intervened. It is upon a careful study and analysis of these cases, as well as upon the more practical experience derived from my own cases, that my conclusions are based.

Time will not permit me to go into these cases in detail, and I can do nothing more than give a brief summary of the results.

We find a total of 38 cases of malignant disease in which an erysipelas has occurred, either by accident or intent.

Of these 38 cases the erysipelas occurred accidentally in 23 cases, and was the result of inoculation in 15 cases (including my own); 17 cases were carcinoma, 17 cases were sarcoma, 4 either sarcoma or carcinoma.

The immediate and final results were as follows:

Carcinoma. Of the 17 cases, 3 were permanently cured. In addition, 1 case of probable carcinoma (Hutchinson's) was well five years after the attack of erysipelas. Of the remaining 13, 10 showed improvement, which, although temporary, undoubtedly added to the life of the patient in most cases. One case (Janike's) died, as a result of the erysipelas, on the fourth day.

Sarcoma. In turning to sarcoma we find the curative action of the erysipelas even more marked. Of the 17 cases of sarcoma we find 7, or 41 per cent., well and free from recurrence from one to seven years after the attack of erysipelas. Nearly all of these 7 cases have a remarkable history. The cases of Dr. Bull, Dr. Gerster, and my own have already been described.

The remaining 4 were as follows: The first (Biedert's) was a

very large round-celled sarcoma, involving mouth, face, nose, and orbit of a child ten years of age. The features were greatly distorted, and the general condition so bad that death from exhaustion was anticipated soon. While in daily expectation of being obliged to do a tracheotomy, a severe attack of facial erysipelas occurred. The tumor disappeared, as if by magic, during the course of the erysipelas. The child recovered, and at the end of a year was perfectly well, with no trace whatever of recurrence.

The next case (Brun's) was a melanotic sarcoma of the breast, with entire disappearance, and no recurrence.

The sixth case (Busch's) was a multiple sarcoma of the face that entirely disappeared after an attack of facial erysipelas, and did not return.

The seventh case (Kleeblatt's) was a lympho-sarcoma of the neck, very large; the erysipelas in this case being the result of inoculation.

In addition to these seven cases there is one other, a probable sarcoma of the breast, that was cured.

Ten of the remaining eleven showed more or less marked improvement; in some cases the tumor entirely disappearing, and not recurring for several months.

One case died as a probable result of the erysipelas, which was in this instance accidental.

To put the result still more briefly: In carcinoma, 17 cases, 3 cures, 17.6 per cent.; 1 death, 5.9 per cent. In sarcoma, 17 cases, 7 cures, 41 per cent.; 1 death, 5.9 per cent.; 4 sarcoma or carcinoma, 2 cured.

These cases have been in no way selected, and I have made every effort to include all cases resting upon competent authority, yet it might be urged as an objection to accepting these figures as representing the true percentage of cures, that cases have probably occurred which, owing to no marked improvement following the erysipelas, naturally failed to be reported. This objection, though valid as far as the accidental cases are concerned, would cease to hold in the cases of inoculation for the reason that, being so few in number, all, or nearly all, have probably been reported.

Grouping by themselves, then, the cases where the erysipelas was artificially produced, we find 7 cases of carcinoma, 1 cure, or 14.3 per cent., and 8 cases of sarcoma, 2 cures, 25 per cent. These cases were as follows: Fehleisen, 2; Kleeblatt, 2; Busch, 1; the remaining 3 cases being my own.

These figures may then be taken to fairly represent the curative effect upon carcinoma and sarcoma in the worst cases; and when we reflect that in nearly every instance the tumor was not a primary growth, amenable to operative treatment, but either a recurrence after operation had been tried and failed, or from its nature inoperable, then and then

only are we in a position to fully estimate the importance and value of erysipelas as a *curative agent*.

I have purposely excluded in the foregoing analysis 8 cases of my own treated by *repeated injections* of erysipelas cultures, which, without producing erysipelas, caused marked improvement in the tumors. These cases should be grouped by themselves, and they bring us back to the question regarding the nature of this *curative principle*, which, however variable its action, must be regarded as having a constant relation to erysipelas.

In my former paper I referred briefly to the different theories offered in explanation of this benign action, and even then I was inclined to believe it due to "antagonistic bacterial action," the neoplasm being regarded as dependent upon some unknown micro-organism.

Since that time the evidence in favor of the micro-parasitic origin of cancer has been steadily and rapidly accumulating until at the present moment it rests little short of absolute demonstration. Time will not permit more than a brief mention of the more salient points of this evidence, yet since a proper appreciation of its character and strength is necessary to anything like a clear understanding of the probable action of erysipelas upon malignant tumors, we cannot pass over it unnoticed. We shall consider :

1. *The close resemblance of cancer to other diseases known to be of bacterial origin.* The striking analogy between cancer and tuberculosis was noticed long before the tubercle bacillus was discovered. Sir John Simon in 1877 clearly pointed out this analogy, and in fact even then argued very strongly in favor of a micro-parasitic origin of cancer. His paper states the points at issue so clearly and briefly, and moreover the facts adduced and the conclusions drawn—showing as they do an almost prophetic insight—make it a paper that can be read with the greatest interest and profit to-day. He pointed out the error in the earlier investigations in allowing the "anatomical forms," interesting enough in themselves, to obscure the more important "property of infectiousness," which he regarded as the "real puzzle" of the disease. "The anatomical forms are matters of mere local accident, but the infectiousness of cancer represents its very cause." He showed that the element of heredity plays an entirely different rôle in cancerous and non-cancerous tumors; that while in the latter the hereditary influence often seems to be the *entire* cause of the tumor, an "embryonic fault" belonging to the same pathological class as supernumerary toes and fingers—in *cancer* it supplies only that portion of the cause which, as in tuberculosis, is familiarly known as *predisposing conditions*. This opinion we know is generally accepted at the present day. There is, moreover, a growing tendency to no longer adhere to the stereotyped classification of "tumors," and we venture to predict that in the near

future, instead of "tumors," a class at present embracing elements without the remotest analogy either in their etiology or mode of development, we shall have two main groups—the first of which might be designated as *congenital hypertrophies*; the second, *neoplasms*, etiologically dependent upon infection from without.

This statement may seem a trifle strong, since Cohnheim's embryonic theory of the origin of cancer is not only still held by the larger body of medical men, but has quite recently been championed by Baumgarten in Germany as well as by distinguished pathologists in this country. In spite of all the objections and criticisms, the micro-parasitic theory has steadily gained ground, and just now the confirmations are rapidly outnumbering the objections. These objections, the most of which were formulated by Cohnheim himself, ten years ago, have nearly all been answered. He argued that cancer could not be of microbic origin, first, because it was neither epidemic nor endemic. Tuberculosis is neither epidemic nor endemic, yet due to Koch's bacillus. Malaria is neither contagious nor epidemic, yet is caused by an intra-cellular parasite; again, tetanus is not contagious, and hardly more endemic than cancer itself, as shown by the researches of Haviland, and confirmed by recent investigations.¹ The second objection was that cancer could not be inoculated from one individual to another or to animals.

Cancer has been transferred from one part of the body to others in the same individual (Hahn and Von Bergmann) by inoculation, and moreover, it has been transferred from one animal to others in a few cases. That most of the experiments in inoculating animals have failed is really no objection to the theory. We know that there are many vegetable and animal parasites whose life history embraces a long cycle of changes in form and development, only a brief portion of which is found in the "host."

The *evolution of parasites* is a subject of great interest and importance, yet one that, as yet, has been but little investigated by the trained naturalist and biologist.

For a clearer understanding of the "laws of parasitism," and their relation to specific diseases, we are much indebted to the recent and valuable contribution of Dr. Joseph Frank Payne, of London. If his view, that there is a definite relation between the contagiousity of a specific disease and its chronicity be correct, we at once see a striking analogy between cancer on the one hand, leprosy and tuberculosis on the other, and there is no need to go further for an explanation of the slight contagiousity of cancer. Ballance and Shattuck go so far as to assert that "there is no fact in the etiology or life history of carcinoma or sarcoma that has not its counterpart in tuberculosis."

¹ The researches of Gueilliot prove cancer to be mildly contagious.

2. *Analogous diseases in animals and plants known to be of parasitic origin.* In the vegetable kingdom we find a large variety of "tumors" known as "galls." One by one these have all been proven to be of parasitic origin. If we turn to the lower animals, we find in "coccidial infection" an analogy so striking, that many observers have considered it identical with cancer. Without entering into any discussion of this question, this much may be regarded as proven: That certain low organisms or protozoa known as coccidia, have been found in animals, chiefly rabbits; that they possess the very *rare* property of being able to set up a proliferation of epithelium; that in the animals in question, and at least in one case (Leuckhart's) if not in two cases in man, they have produced multiple tumors associated with the same clinical symptoms and pathological changes that are found in true cancer.

We must further admit that several independent observers, notably Sawtschenko on the Continent, and Ruffer and Walker in England, by the use of improved methods of staining have been able to demonstrate the constant presence of protozoa in a very large number of specimens of carcinoma. That these are true parasites and not "invaginated cells" or "degenerated metamorphoses," as many have been inclined to regard them, has been very recently confirmed by the testimony of Metschnikoff, the highest living authority in micro-zoölogy.

These protozoa are so similar to the coccidia already referred to, that they can scarcely be differentiated. Whether or not they are identical, seems to me a matter of indifference; that they are very closely allied forms seems more than probable. That they have not yet been cultivated outside the body is no evidence against their being the cause of cancer, when we consider how much time it has taken to discover their mere presence.

If, with a distinguished authority, we admit that "for the development of cancer it is necessary that there should be a continuous irritation, and one capable of multiplication," and knowing as we do that the irritants capable of fulfilling these conditions are limited almost entirely to the animal and vegetable parasites, we can scarcely fail to accept the micro-parasitic theory. The great merit of this theory, as Ballance and Shattuck have pointed out, is that "it not only offers a working hypothesis for further investigation with which none other can compare, but it holds out the hope that it may one day admit of scientific treatment based on the same lines as other micro-parasitic diseases." Having endeavored to make clear the grounds for believing in the parasitic origin of cancer, the explanation of the action of erysipelas is not difficult. If a small quantity of blood-serum of an animal rendered immune to tetanus is capable of destroying or rendering inert the virulent bacilli in a fresh case, it is quite as easy to understand that the toxic products of the erysipelas streptococci might bring about such changes in the blood-

serum as to destroy the parasite of cancer. The parasite having been destroyed, the irritation would consequently cease, and this would lessen the hyperæmia of the parts, upon which factor the life of the tumor-cells of low vitality largely depends.

This theory, if it may be called such, has occurred to me as offering the best explanation of all the phenomena observed. It explains the rapid degeneration, with a breaking down of the tumor tissue, as well as the slower disappearance by absorption. It also explains those interesting cases, several in number, where an erysipelas remote from the tumor has caused a disappearance in precisely the same way as a local attack. These latter cases, it would seem, prove the phagocytosis theory insufficient to explain the action of erysipelas. It is worthy of note that the action of erysipelas upon lupus and the secondary and tertiary lesions of syphilis (see Mauriac) is similar to that in malignant tumors, and this fact, joined to the fact that erysipelas has never been known to affect non-malignant tumors, is another point in favor of the parasitic origin of cancer.

The attempt to explain its action on the theory of a mere local irritation, classing it with the various caustics, needs only to be mentioned to be disproved.

The clinical facts already mentioned, that a number of malignant tumors have disappeared as a result of an erysipelas in another region of the body, coupled with the very recent experiments of Prof. Spronck and his co-workers in Leyden, settle the point beyond dispute. In the experiments referred to, twenty-six cases of malignant disease (eight sarcoma, eighteen carcinoma) were injected subcutaneously with the toxic products of the streptococcus of erysipelas, the germ itself having been destroyed and removed.

In every case the injections were made in parts remote from the tumor, usually the gluteal region. Nearly all of the cases of sarcoma showed marked improvement, and in some cases the tumor entirely disappeared. It is true recurrence usually took place, yet in one case (Remsen's), a large inoperable sarcoma, the primary growth entirely disappeared, the secondary growths were reduced to very small size, and there had been no recurrence up to the publication of the paper.

The effect upon carcinoma was very slight, and only in one case was the beneficial action marked.

It should be noted that very small doses were used in these cases, one-half to one gramme.

In no case was the reaction very great, 103° being the highest temperature recorded, the condition usually becoming normal at the end of twenty-four hours. Spronck himself admits that better results might have been obtained from larger doses, yet he preferred to err on the side of safety.

Treatment by repeated injections of fluid cultures. As far as I know, my cases are the only ones that have been treated by repeated injections of the pure fluid cultures of erysipelas.

I began this method more than eighteen months ago, and have used it in nearly all my cases. I have in most cases made the injections deeply into the tumors themselves. The doses employed have varied with the age and virulence of the cultures, but I have aimed to obtain a good reaction, a temperature of 104° or $104\frac{1}{2}^{\circ}$ frequently following. The reaction has usually subsided within thirty-six to forty-eight hours after the injection, unless erysipelas was produced. The effect upon the tumors was more marked in the cases of sarcoma than carcinoma, but all cases showed a cessation of growth and a more or less marked diminution in size. Several sarcomatous nodules, some nearly one inch in diameter, disappeared entirely. It is evident that in these cases the effects produced were chiefly due to the toxic products of the streptococci.

In view of these results, as well as those of Spronck, it may be considered definitely proven, that a portion, if not all, of the benign influence rests in the toxic products of the erysipelas germ, rather than in the germ itself. The fact that, thus far, the results from an attack of true erysipelas have been far more brilliant and permanent, prove that either the germ itself or its continued action plays an important rôle, or, what is quite as probable, we have not yet learned how best to isolate the toxic principles and to use them in the most efficacious doses. It is more than probable that sterilizing cultures by heat changes the chemical relations of the toxalbumins. I am at present, with the assistance of Dr. Alexander Lambert, making experiments with *filtered cultures*, the germs having been removed by means of a Kitasato filter, without subjecting the fluid filtrate to heat. If the virtue of the erysipelas lies entirely in these toxic principles, the treatment of malignant disease will be much simplified, as there will be neither the danger from the erysipelas nor the necessity for isolation.¹

Dangers associated with erysipelas. I have endeavored to ascertain as far as possible the actual mortality of uncomplicated erysipelas. Nearly everything that has been written upon the subject is of little value in determining this point, because the term "erysipelas" has been used in a very loose way, including many cases of cellulitis and septic infection. I do not believe in the identity of the streptococcus of erysipelas and the streptococcus pyogenes, although I am aware that the opposite opinion is held by many of the leading bacteriologists. Those who hold to the identity of the two germs, base their opinion largely upon the close

¹ Since the above was written, the very valuable researches of Roger have been published in the *Revue de Méd.*, December, 1892. They go far toward proving that the virtue of the erysipelas rests in the toxic products, which can be easily isolated and used in much larger doses than by Spronck.

resemblance, morphologically and biologically, and they claim that the clinical differences are due to the different sites of infection and variations in virulence of cultures; that the same germ in the outer layers of the skin will produce true erysipelas, that injected deeply into the tissues will cause cellulitis and multiple abscesses. I believe this explanation entirely theoretical and not supported by facts. During the course of these experiments I have injected, upward of one hundred and fifty times, pure cultures of the streptococcus of erysipelas, of almost every degree of virulence, into the (human) tissues, superficially and deeply. In but two cases did I see an abscess, and in one of them a careful bacteriological examination was made of the pus (before it had become contaminated), and mixed cultures were found, the staphylococcus aureus being present with the streptococcus.

There appears to be good ground for believing that when suppurative processes are associated with erysipelas, a mixed infection is present, and that there is a real and important difference between the germ of erysipelas and the streptococcus pyogenes, in spite of their close resemblance.

The fact that they are pathogenic for different animals respectively, and also their different action with reference to lactic acid, are other points against their identity.

If we include the cases of diphtheria inoculated with erysipelas (Babtschinski), we have a total of 40 cases where erysipelas has been artificially produced, with but one death—2½ per cent. We know that the virulence of the germ varies within wide limits, and that it can be modified at will by passing it through animals, therefore it seems reasonable to assume that with proper precautions its mortality in inoculation can be made trifling or *nil*.

CONCLUSIONS.—1. The curative effect of erysipelas upon malignant tumors is an established fact.

2. The action upon sarcoma is more powerful than upon carcinoma, in about the ratio of 3 to 1.

3. The treatment of inoperable malignant tumors by repeated inoculations of erysipelas is both practicable and not attended with great risk.

4. The curative action is systemic, and probably due chiefly to the toxic products of the streptococcus, which products may be isolated and used without producing erysipelas.

5. This method should *not be employed indiscriminately* until further experiments have proved its limitations.

In concluding, I wish to express my great indebtedness to Dr. Wm. T. Bull for the advice and assistance frequently and generously given, without which much of the work would have been impossible. I am also under deep obligations to the authorities of the New York Cancer Hospital, to Drs. Prudden and Cheesman of the College of

Physicians and Surgeons, and to Drs. Ferguson and Biggs of the New York Hospital Laboratory, for kind assistance and laboratory facilities.

[NOTE.—Since the above paper went to press I have continued my experiments, with the following results: I have had one fatal case of erysipelas inoculation—a large inoperable sarcoma of the neck. The patient was sixty-five years of age, and his general condition had been greatly impaired, both by the disease and by a very extensive operation a short time before. Attenuated cultures having failed to produce any reaction, a fresh culture from a virulent case was used. A severe attack of erysipelas followed, to which the patient succumbed on the fifth day. In this short period a marked change had taken place in the tumor. No breaking down had occurred, yet it was less than half its former size.

Toxic products. During the past month I have been using a preparation of the toxic principles of erysipelas in four cases of inoperable sarcoma. The injections have been made into the tumor itself, and repeated every forty-eight hours. The reaction has been almost identical in character with that produced by true erysipelas, though milder in degree, and it has always passed away within twenty-four to forty-eight hours.

The temperature has never risen above $103\frac{1}{2}^{\circ}$, and has usually dropped to normal the following day. I have frequently made use of the toxic products of the *bacillus prodigiosus* in combination with the products of the erysipelas coccus, to intensify the action of the latter, and always with the desired effect. (This peculiar action of the one germ upon the other, I may add, was noted by Roger in his recent experiments on rabbits.)

Every one of my four cases of sarcoma has shown a marked and progressive decrease in the size of the tumor, and in one case (*vide* paper, Case VI.) a sarcoma of the back and groin, the tumor has entirely disappeared, and the injections have been stopped. The patient has regained his normal weight (one hundred and sixty-five pounds) and has returned to work.

These results have been so encouraging that, for the present at least, I have decided to use the toxic products of erysipelas in preference to inoculating the germ itself. The advantages of so doing are very great. The necessity for isolation is avoided, and the action of the products can be so carefully regulated that the danger element can be entirely eliminated.]

Reference.	Surgeon.	Age	Date.	Character of tumor.	Erysipelas, accidental or inoculated.	Immediate results.	Final results.
1. Berlin. klin. Woch., 1866, 23; 1868, 32.	W. Bnsch	43 F.	1866	Multiple sarcoma of skin (face).	Erysipelas, facial, accidental.	Large tumor broke down; smaller ones disappeared by absorption.	Permanent cure.
2. Ibid.	Ibid.	28 F.	1868	Very large lympho-sarcoma of neck, size child's head.	Erysipelas, facial, accidental.	Tumor diminished in size one-half in eight days.	Died on eleventh day, collapse.
3. Ibid.	Ibid.	19 F.	1868	Large inoperable sarcoma of neck.	Erysipelas, produced by putting patient in bed near case of erysipelas.	Tumor greatly diminished in size in two weeks; began to grow again.	Improvement temporary.
4. Archiv f. klin. Chir., Bd. xii. S. 18	Mosengeil	50 F.	.. ..	Carcinoma of face; partial excision; recurrence.	Erysipelas, accidental; slight attack lasting two days.	Cessation of growth; patient discharged at end of three weeks.	Not traced.
5. Inaugural Dissertation, Bonn, 1870.	Hahn	...	1870	Carcinoma of face.	Erysipelas, accidental, several attacks.	Temporary destruction of tumor.	Recurred soon after.
6. Archiv f. klin. Chir., Bd. xli. 111.	Mosengeil	...	.....	Epithelioma of ear.	Erysipelas, accidental.	Disappearance.	Cure.
7. Schmidt's Jahrbucher, Bd. cxlvi. 345	Lusana	52 F.	.....	Epithelioma of temporal region.	Erysipelas, facial, accidental.	Disappearance in five weeks.	?
8. Vratich, 1882, S. 262.	Stein	F.	.....	Large tumor of breast, skin adhesion, axillary glands involved; carcinoma with little doubt.	Erysipelas of back, accidental.	Almost entire disappearance of tumor, only two small nodules size of nut left.	Not traced.
9. Bull. de la Soc. de Chir., t. viii. 302.	Nélaton	...	.....	Large tumor of lower jaw (sarcoma probably).	Erysipelas, accidental, facial.	Entire disappearance.	Recurred.
10. Ibid.	Pamard	M. ad't	.....	Carcinoma of sub-maxillary glands following excision of tongue.	Erysipelas, accidental.	Completely disappeared	Recurred.
11. Ibid.	Delens	F. ad't	.....	Very large tumor of breast.	Erysipelas, accidental.	Total disappearance.	Recurred.
12. La Union Médicale, 1882, 136.	Dauchez	F. 52	.....	Carcinoma of temporal region ulcerating; enlarged glands.	Erysipelas, facial, accidental.	Tumor reduced in size one-half; glands entirely disappeared.	Recurred.
13. Gaz. heb'd., 1885, 26.	Ricochon	F. 52	1885	Very large lympho-sarcoma of neck; large tumor of tonsil.	Erysipelas, facial, accidental (sev're attack).	Very great decrease in size of tonsil and neck tumors.	Later grew again
14. Deut. med. Zeitung, 1886, 4.	Biedert	F. 11	1886	Large sarcoma; round-celled sarcoma involving mouth, nose, and throat; tonsil tumor size of goose-egg	Erysipelas, facial, severe attack, accidental.	Entire disappearance of all tumors in one week.	Child perfectly well and free from recurrence one year later.
15. Beiträge z. klin. Chir., 1888, 446.	Bruns	47	.....	Melanotic sarcoma of breast.	Erysipelas, accidental.	Entire disappearance.	Permanent cure.
16. Centralbl. f. Chir., 1884, 44.	Neelsen	F. ad't	.....	Carcinoma of breast.	Erysipelas, accidental, severe; three weeks later 2d attack.	Tumor greatly diminished in size.	Recurred later; new tumor.
17. Ibid., 25.	Janike	F. ad't	.....	Carcinoma of breast, recurrent.	Erysipelas inoculation	Tumor much softer and smaller.	Death fourth day from erysipelas.

Reference.	Surgeon.	Age	Date.	Character of tumor.	Erysipelas, accidental or inoculated.	Immediate results.	Final results.
18. Erysipelas. Monograph, Fehleisen. Berlin, 1883.	Fehleisen	F. 58	1882	Multiple fibro-sarcoma of skin (gluteal region).	Erysipelas, inoculation (scarification).	Reaction in 61 hours; course 14 days; small tumors disappeared; main mass partially degenerated.	Temporary improvement.
19. Ibid.	Ibid.	F. 49	1882	Carcinoma of breast recurrent (2 x 3 inches diameter).	Erysipelas, inoculation.	Reaction 30 hours; two weeks' course; entire disappearance of tumor.	No relapse nearly one year.
20. Ibid.	Ibid.	F. 8	1882	Sarcoma intra-ocular; secondary in submaxillary glands.	Erysipelas, inoculation.	Reaction 23½ hours; little change in primary growth; glands diminished one-half.	Temporary improvement.
21. Ibid.	Ibid.	F. 52	1882	Carcinoma of breast, disseminated.	Erysipelas, inoculation.	Reaction 19 hours; two weeks' course; tumor reduced one-half in two weeks.	No further decrease.
22. Ibid.	Ibid.	F. 40	1882	Carcinoma of breast, recurrent; axillary and cervical glands involved.	Erysipelas, inoculation.	Reaction 15 hours; one nodule softened and broke down, others not greatly diminished.	Temporary improvement.
23. Inaugural Dissertation, Berlin, 1889.	Welchel	M.	1889	Carcinoma of penis and ing. glands (recurrent).	Erysipelas, of scrotum, accidental.	Three weeks' course; entire disappearance of carcinomatous masses.	Patient died later from sudden hemorrhage from surgical wound. Autopsy: all organs normal.
24. Reports of N. Y. Surg. Soc., 1892; N. Y. Med. Journ., 1892, i. 641.	Gerster, A. G.	F. 16	1884	Sarcoma of femur; amputation of trochanter minor; recurrence in stump.	Erysipelas, accidental; five weeks after recurrence.	Entire disappearance of tumor.	Patient alive and well three yrs. after.
25. Annals of Surg., Sept. 1891, Coley	Bull, W. T.	M. 30	1884	Large round-celled sarcoma of neck; five operations; recurrence.	Erysipelas, accidental, two attacks.	Entire disappearance.	No recurrence in seven years.
26. Vratich, 1882, 16; Lond. Med. Record, 1884, 11.	Winslow	M. ad't	1882	Sarcoma of neck; clinical diagnosis	Erysipelas, accidental.	Total disappearance.	One year later a sarcoma of breast developed.
27. Münch. med. Woch., 1890, No. 7.	Kleeblatt	M. 54	1888	Sarcoma of neck following removal of sarcoma of tonsil.	Erysipelas, accidental; second attack three months later by inoculation.	Diminution in size from child's head to pigeon's egg in ten days.	Temporary improvement. Recurred two months; erysipelas inoc. Complete disappearance. 2d recurrence one month.
28. Ibid.	Ibid.	M. 52	1888	Sarcoma of neck (microscopic).	Erysipelas, inoculation.	Entire disappearance.	No recurrence 1890 (2 years).
29. N. Y. Cancer Hospital Records, 1883.	Powers and Dowd	F. 52	1892	Sarcoma sup. maxilla.	Accidental.	Diminished one-half in two weeks.	Recurred.
30. Annales de l'Institut Pasteur, 1888, 223.	Holst	F. 40	1887	Carcinoma of breast, recurrent.	Erysipelas, inoculation.	Reaction 20 hours; nine days' course; recurred three times; marked decrease in size.	Relapsed four months later.
31. Archiv. of Clin. Surg., July, 1892.	Hutchinson, Jonathan	F. ad't	.....	Probable carcinoma of breast.	Erysipelas, accidental.	Entire disappearance.	No recurrence in five years.
32. Personal communication.	Finney, J. M. T. (Baltimore)	...	.....	Epithelioma of nose, size of silver quarter.	Erysipelas, accidental.	Entire disappearance.	No recurrence in two years.
33. Ibid.	Ibid.	...	.....	Double carcinoma of breast, recurrent; axillary glands involved.	Erysipelas, inoculation.	Diminution in size; general improvement; had two spontaneous attacks later.	Died five months later from metastasis.
34. Ibid.	Starr, C. L.	F. ad't	1892	Carcinoma of breast and axillary glands; several nodules in arm; breast incised.	Erysipelas produced by direct inoculation from fresh case.	Severe attack of erysipelas extending over breast and down arm; nodules in axilla and arm disappeared.	Temporary improvement. Nodules in arm and axilla entirely disappeared.

Reference.	Surgeon.	Age	Date.	Character of tumor.	Erysipelas accidental or inoculated.	Immediate results.	Final results.
35. Ibid.	Eliot, E., Jr.	F. ad't	1892	Carcinoma of breast, recurrent.	Erysipelas, accidental.	Marked decrease in size of tumor, and general improvement.	Subsequent increase; attempt to inoculate unsuccessful. Again grew.
36. Ibid.	Morris, R.I.	F. 26	Dec. 1892	Carcinoma of breast, recurrent.	Erysipelas, accidental.	Ten days' course; marked decrease in size of tumor.	Cure.
37. Münch. med. Woch., July, 1890.	Kleeblatt	F. 23	.....	Tumor the size of pigeon's egg under eyelid.	Erysipelas, accidental.	Entire disappearance.	Cure.
38. Ann. Surg. (Coley). Reported in part.	Coley, W.B.	M. 31	May, 1891 Oct 1891	Sarcoma of neck and tonsil, recurrent.	Repeated inoculation; first real attack of erysipelas Oct. 1891.	Diminution in size; subsequent increase; after attack in October almost entire disappearance of tumor of neck and decrease of tonsil tumor.	Patient in good health March, 1893; no return in neck; tonsil tumor smaller.
39. Ibid.	Ibid.	F. 16	May, 1891	Sarcoma of femur size child's head; periosteal rounded.	No attack of erysipelas produced; repeated injection of pure culture	Slight decrease in size; marked local and constitutional reaction.	Died 3 months later from exhaustion.
40. Ibid.	Ibid.	F. 26	July, 1891	Sarcoma of vertebrae, spindle-celled; recurrent.	Repeated inoculation; no attack of erysipelas; cultures attenuated.	Slight softening of tumor; reaction 103½°.	Effect temporary, injections continued but short time.
41. Unpubl.	Ibid.	M. 44	Feb. 1892	Sarcoma of back (17 in. in diam.), spindle-celled.	Repeated inoculation failed to produce erysipelas.	No effect on tumor.	Injections discontinued, as cultures were too weak.
42. "	Ibid.	M. 76	June, 1891	Carcinoma of face.	Inoculation failed to produce erysipelas.	Reaction 102½°; no effect on tumor.	But three injections made; cultures poor.
43. "	Ibid.	M. 40	April, 1892	Sarcoma of back and groin, recurrent.	Inoculation, severe attack of erysipelas; 2d attack Nov. 1892; 3d attack Dec. 1892; 4th attack Dec. 1892.	Tumor of back 7 x 4 inches entirely disappeared in two weeks, tumor of groin as well.	Recurred July. Reinoculated Oct and Nov. Tumor again almost disappeared. Recurred in back, Mar. 1893, condition excellent. Entirely disappeared after toxic products injections
44. "	Ibid.	F. 40	June, 1892	Sarcoma of breast, recurrent; eight operations.	Inoculation erysipelas; first attack June, second July.	Tumor much diminished in size; general health improved; small tumor of vagina disappeared.	Subsequent relapse and growth; treated by repeated injections of pure cultures. Subsequent operation and injection; still under treatment
45. "	Ibid.	F. 42	Aug. 1892	Carcinoma of breast, recurrent; four operations; size of goose-egg.	Repeated inoculations; eight weeks no attack of erysipelas	Tumor diminished in size one-half; general health not affected; Reaction 101 to 104°.	Subsequent growth.
46. "	Ibid.	M. 54	Oct. 1892	Carcinoma of cervical glands; recurrent.	Repeated inoculation; no attack of erysipelas.	Tumor softened and broke down in part; reaction 100-103½°.	Subsequent operation.
47. "	Ibid.	M.	Oct. 1892	Carcinoma of Inguinal glands; recurrent.	Repeated inoculation; no erysipelas produced.	Reaction 103½°; partial degeneration of tumor.	

BIBLIOGRAPHY.

- Fehleisen*: Die Etiologie Erysipels, 1883.
Bruns: Beiträge z. klin. Chirurg., 1888.
Biedert: Deutsche med. Zeitung, 1886, No. 4.
Holst: Annales de l'Institut Pasteur, 1888, 223.
Hutchinson, Jonathan: Arch. Clin. Surg., July, 1892.
Lassar: Centralblatt f. Bakt. u. Parasit., 1891, 391, 581.
Mauriac: Gazette des Hôp., 1873, 305 *et seq.*
Simon: St. Thomas Hospital Reports, 1892 (v., xx.).
Shattuck and Ballance: Ibid.
Crookshank: Brit. Med. Journ., 1891, i. 361.
Kanthack: Brit. Med. Journ., 1892, ii. 985.
Woodhead: Cancer and Cancerous Diseases. Brit. Med. Journ., May 7, 1892.
Ruffer and Walker: Protozoa in Cancerous Tumors. Brit. Med. Journ., July 16, 1892.
 Second note on same. Ibid., November, 1892.
Karg: Ueber das Carcinom. Deutsche Zeit. f. Chirurg., 1892, 132.
Haviland: Geographical Distribution of Disease in Great Britain, 1892.
Sawtschenko: Centralblatt f. Bakt. u. Parasit., 1892, xii. 17.
Schuchardt: Archiv f. klin. Chirurg., 1892, H. 3, 4.
Podwyssozki: Centralblatt f. Chirurg., 1892, 402.
Schleich: Deutsche med. Wochenschr., and Centralblatt f. Chirurg., 1891, 15.
Jordan: Centralblatt f. Chir., No. 2691.
Roebner: Berlin med. Wochenschr., 1886, 12.
Weichel: Inaug. Dissert., Berlin, 1889.
Neelsen: Centralblatt f. Chir., 1889, 44.
Spronck: Allgem. med. Central-Zeitung, August 13, 1891.
 — Tumeurs Malignes et Maladies Infectieuses. Annales de l'Institut Pasteur, October, 1892.
Delepine: Protozoa and Carcinoma. Brit. Med. Journ., August, 1892.
Ohlmacher: Chicago Med. Recorder, 1892, 111, 466.
Andrews: Journ. Am. Med. Assoc., November 23, 1889.
 Parasite of Cancer. Editorial, Journ. Am. Med. Assoc., January 14, 1893.
Metschnikoff: Cancer and Coccidial Diseases. Revue générale Sciences pures et appliquées, 1892.
Pfeiffer: Zeit. f. Hygiene, 1888.
Sternberg: Manual of Bacteriology.
Roger: Annales de l'Institut Pasteur, July 25, 1892.
 — Rev. de Médecine, 1891; Ibid., December, 1892.
Braatz: Deutsche med. Wochenschr., 1891, 857 (note).
Babtschinski: International klinische Rundschau, 1890, 633.
Sir James Paget: Brit. Med. Journ., 1880 and 1887.
Frisch: Erysipel der Harnblase. Beiträge z. Chirurg. Festschriften gewidmet Billroth, 1892.
Hirsch: Handbuch der geographischen Pathologie.
Volkman: Erysipel, Pitha-Billroth's Handbuch, Bd. i.
Winckel: Erysipelococci als Erreger von Puerperalfieber. Congress f. Gynäkol., München, 1886.
Guarnieri: Contribuzione allo Studio dello Streptococco dell' Erysipela. Arch. p. le Scienze Med., 1887.
Noorden: Ueber Streptococci in Blut bei Erysipelas. Münch. med. Wochenschr., 1887.
Hartmann: Archiv f. Hygiene, 1887.
Cheyne, W. Watson: International Congress of Demography and Hygiene, 1891.
Von Lingelsheim. (Vide Sternberg.)

- Biondi*: La Riforma Medica, 1886.
Adamkiewicz: Untersuchungen über den Krebs, Wien, 1893.
Ochotine: Archives de Médecine Experimentale, Mars, 1892.
Metschnikoff: Leçons sur la Pathologie comparée de l'Inflammation, Paris, 1892.
Roger: Revue générale des Sciences, June, 1891.
Manfredi e Traversa: Giornale Internaz. delle Scienze Med., 1888.
Pfeiffer: Die Protozoen als Krankheitserreger, Jena, 1891.
Sjöbring: Fortschritte der Med., July 15, 1890.
Psorosperms and Cancer. Med. Press and Circ., December 28, 1892.
Sporozoa and their Relation to Coccidial Disease. Med. News, January 7, 1893.
Crookshank: Identity of the Streptococcus Pyogenes and S. Erysipelatis. Internat. Cong. Demog. and Hygiene, 1891.
Von Eiselsberg: Arch. p. le Scienze Med., 1887, xi.
Russell: Brit. Med. Journ., 1890.
Baumgarten: Lehrbuch der Path. Mykologie, 1890, 228.
Kirchner: Von der Identität des S. pyogenes u. S. Erysipeles. Centralblatt f. Bakt. und Parasit., 1892, 749.
Jordan: Die Aetiologie des Erysipels. Brun's Beiträge z. Chir., Bd. vii. 673.
Ziegler's Beiträge, 1891, xi. 1.
 — Allgemeine Pathologie, 1892.
Horwitz: Antagonism between Streptococcus of Erysipelas and Syphilis. Med. News, 1891, 324.
Leroy: Biological Study of the Microbe of Erysipelas. British Journal of Dermatology, 1890, 20.
 18 EAST THIRTY-SECOND STREET.

DIFFUSE TUBERCULAR HEPATITIS WITH TUBERCULAR PERICARDITIS.¹

BY ALEXANDER MCPHERDAN, M.B.,

ASSOCIATE PROFESSOR OF MEDICINE AND CLINICAL MEDICINE, UNIVERSITY OF TORONTO,

AND

JOHN CAVEN, M.D., L.R.C.P. LOND.,

PROFESSOR OF PATHOLOGY, UNIVERSITY OF TORONTO.

THE following case is worthy of being placed on record, both on account of the rarity of the disease and the unusual character of the symptoms.

Ellen S., aged twenty-eight years; married; husband and one child dead of tuberculosis; four children living and healthy; family history unimportant. Since her husband's death, two years ago, she has been in domestic service. She enjoyed good health until early in December, 1891, when she began to feel epigastric distress after eating, and a short time later vomited almost as soon as food was taken. The vomited matter became increasingly bile-stained, whilst strength failed and thirst was prominent. About January 1, 1892, she noticed a jaundiced hue which soon became quite marked. The bowels had become loose in December,

¹ Read at the Meeting of the Canadian Medical Association, Ottawa, September, 1892.

and now a troublesome diarrhœa set in. She frequently had chilly sensations, but no rigors, and was confined to bed during most of January.

When admitted to Toronto General Hospital, on January 27, 1892, she was considerably emaciated, and her face had an anxious, pained expression. The conjunctivæ and body surface generally were deeply jaundiced and the skin moist. Her temperature was 99.5° F., pulse 108–120 beats to the minute. Distress was still felt in the epigastrium, and also in the right hypochondrium, but there had been no vomiting for two weeks. The bowels were constipated and stools clay-colored.

Inspection showed the abdomen to be decidedly full in its upper part, and the lower border of the liver was easily traced across a level three-quarters of an inch above the umbilicus; it was even and somewhat rounded, the surface of the organ being smooth and tender. In the left side the hepatic dulness was continuous with that of the spleen, the lower end of which extended one inch below the border of the ribs. There was considerable tenderness all over the liver and spleen, and continuous pain in these regions was complained of.

There were signs of pleural effusion in the right side, dulness extending as far forward as the mammary line, and as high as the fourth rib in that line and the fifth dorsal vertebra behind. Over this area respiratory sounds were audible, but weak, and occasional friction sounds were present with both inspiration and expiration.

The apex beat of the heart was displaced a little outward and was somewhat diffuse, a high-pitched systolic sound, probably pericardial, being heard over the fourth and fifth costal cartilages to the left of the sternum, almost disappearing with inspiration.

The urine, specific gravity 1015, contained much bile-pigment but no albumin. No signs of disease could be found in the lungs, nor in the abdomen or pelvis, except those already spoken of.

February 8. Signs of pleurisy in left side.

13th. Pericardial friction fremitus felt in the third intercostal space; auscultatory signs very distinct. A week later the whole pericardium became affected, with considerable effusion, precordial dulness extending to the third intercostal space.

20th. Some coarse liquid crepitation present in lower parts of both lungs; this was found to vary in abundance from day to day. There was slight cough with occasionally some thick, dark sputum, mostly blood. The sputum disappeared entirely after a few days, and the cough subsequently abated so much as to give scarcely any trouble. Jaundice had begun to lessen perceptibly.

March 1. The pericardial effusion had begun to absorb; the right pleura showed no change, but the effusion in the left had gradually increased. The abdomen was extremely tender and diarrhœa troublesome, the stools being liquid and offensive. Some effusion into the peritoneal cavity was noted. The urine was less pigmented than at first, and contained a small quantity of albumin. Microscopic examination discovered the presence of pus corpuscles and crystals of tyrosin. The crystals were small, abundant (four or five in a field) and always adherent to pus corpuscles. The size of liver and spleen remained unaltered.

7th. Diarrhœa had become profuse and bowel motions involuntary; patient appeared *in extremis*.

10th. The bowels now became constipated and patient began to improve.

20th. She was quite hopeful and taking nourishment fairly. She slept better, had less pain, and the temperature was less disturbed, and finally sat up for an hour or two daily. This improvement lasted for only a few days, and then she grew rapidly worse again, the temperature varying from 96.5° to 103° F. There were profuse perspirations, but no chills. Jaundice was now completely replaced by a dusky livid hue. Fine liquid crepitation was heard in the lungs, more abundant and generally distributed than before. No signs of pericarditis were present, and no change was noticed in the condition of the right pleural cavity; the effusion in the left was increasing however, as was that in the peritoneal cavity. The urine still contained tyrosin crystals, pus, and a small quantity of albumin.

The patient's condition continued much as above during April, her strength gradually failing, although she had sat at the window of the ward almost daily. The liver showed no change in its condition, but tyrosin crystals were not found in the urine after April 10th. Death took place April 28th.

Report of post-mortem examination—made at the Toronto General Hospital, April 29, 1892:

Inspection shows the body of a woman of apparently forty years of age; emaciation extreme; skin dark and somewhat yellowish in color, black hair on chin and abdomen; rigor mortis and post-mortem staining poor; bedsores over sacrum.

Section shows subcutaneous fat almost none; muscles thin and black; omental fat much wasted; three pints of bright yellow slightly fibrinous fluid in abdomen.

Pleuræ: Diffuse adhesions on both sides; loculi containing fluid formed by adhesions also on both sides; locus on left side large, reaching from second rib to base and limited by nipple line in front; both pleuræ greatly thickened by layers of plastic lymph, only that immediately next the serous membrane being replaced by fibrous tissue; the adhesions appear old and are about one-half inch in thickness, but break down readily, being nearly pure fibrin. The pleuræ are found, when stripped, studded with miliary tubercles. The inflammatory process has spread from right side into the anterior mediastinum, and plastic material is thickly deposited on right half of inner surface of sternum.

Pericardium: Complete fibrinous adhesion exists between the parietal and visceral layers; thick, but readily broken down, except over the surface of the right ventricle, where, on a spot the size of a 25-cent piece, it is firm and fibrous. The lungs overlap the pericardial sac, almost hiding it, and are glued to it by fibrin.

Lungs: Miliary tubercles scattered through both, by far most densely in and just beneath the pleuræ; caseating glands at root of lungs; no consolidation; oedema and hypostasis.

Abdomen: Perihepatitis and perisplenitis of some standing, and with adhesions similar to those found between the pleuræ, fixing the liver and spleen to diaphragm, and spleen to liver.

Spleen: Weight twenty-three ounces; diffuse perisplenitis, adhesions; reaches forward and to right till its border is attached closely to the left lobe of the liver by plastic lymph; miliary tubercles scattered widely through the organ and plainly visible beneath the capsule; consistency, firm; pulp, increased.

Kidneys: Taken out with difficulty on account of density of the peri-

nephric areolar tissue; capsules peel fairly readily; scars as from old infarcts; tubercles in both cortex and medulla, but not in large numbers.

Ureters and bladder: Healthy.

Uterus and ovaries: Healthy.

Supra-renal capsules: Post-mortem softening.

Appendix vermiformis: Four and one-half inches; healthy.

Intestines: Large and small intestines empty, thin, pale; nothing specially noticeable excepting adhesions (old) between the colon, omentum, and gall-bladder.

Stomach: Shows catarrh.

Liver: Large, sixty-two ounces; smooth; cuts hard, as though cirrhotic; of "nutmeg" appearance; miliary tubercles beneath capsule and throughout liver substance; gall-bladder, ducts, and veins healthy.

Pancreas: Soft; post-mortem changes.

Head: Not opened.

Microscopic examination. Miliary tubercles are demonstrated in the lungs, pleuræ, pericardium, diaphragm, liver, spleen, and kidneys.

Liver: Sections of the liver show miliary tubercles, though not in large numbers, from one to three in a section being common. They are scattered widely through the substance of the liver, and tend to be intralobular rather than interlobular. In addition to the tuberculosis there is a *diffuse* interstitial hepatitis, which is largely of the intercellular variety, and which is accompanied by little or no alteration of the capsule from within. The interlobular tissue is widely infiltrated with inflammatory cells, and the inflammatory process has spread into the lobules, causing an intralobular cell-infiltration, in many places quite dense, and a considerable new formation of connective tissue along the lines of the capillaries. This process has extended in many instances through quite a fourth of the distance between periphery and centre of lobule. The capillaries are in parts apparently occluded by the new tissue formation, and numerous leucocytes are to be seen in some, occasionally completely plugging them. The liver cells have undergone marked changes. Fatty infiltration is prominent in parts, whilst cell-atrophy is very conspicuous in the peripheral areas of lobules, where the pressure of the new tissue and cell infiltration is felt. Deposits of brownish-yellow pigment, apparently bile-pigment, are seen here and there in cells, but not in abundance. In very numerous spots a curious hyaline-looking necrosis of the liver cells has occurred. This is noticed both in single cells and in groups of cells, and presents an appearance as though the cell protoplasm had become coagulated and broken up into a large number of roundish particles, some larger than a red blood-corpuscle, but many much smaller. These particles stain strongly with eosin. In most instances the remains of at least one nucleus are distinctly visible amongst the necrosed protoplasm. The nucleus may remain intact, showing large nucleoli, or may be split up into fragments. These necrosed cells are in some cases infiltrated with leucocytes. The nuclei persisting in the broken-up cells are mostly very large, and stain darkly and sharply with hæmatoxylin, and the necrosed cells are also increased in size. Their limits are very definite. Scattered throughout the liver are enlarged cells with gigantic nuclei, corresponding closely to those of the necrosed cells; these are probably going through previous degenerative stages. In some parts numerous small branching bile-ducts are to be seen, such as are noticeable in so-called hypertrophic cirrhosis.

This woman presented a most rare and interesting pathological condition, the true nature of which could be only partly understood from the post-mortem examination. It was thought at first that we had to do with a case of pylephlebitis, with much more than the usual jaundice. There were serious difficulties to be explained, however, if this diagnosis were to be accepted—*e. g.*, the absence of a primary suppurating focus or ulceration in the pelvis, cæcal region, or elsewhere; the absence of chills; the signs of perihepatitis and perisplenitis, together with the affection, one after another, of the several serous cavities, and the long duration of the case. Pyæmia, probably more frequently than any other affection, gives rise to inflammation in such various parts, but its course is usually terminated much earlier. Bright's disease was excluded as a cause, by the condition of the urine, heart, and circulation. That there was sepsis in the case was quite evident from the temperature chart, the sweats, the dusky discoloration of the skin, the tumefied spleen, etc.; the source and nature of the poison were not so readily to be gotten at. When several parts are simultaneously the seat of inflammatory lesions, our minds naturally turn to tubercle as a possible cause; but it seemed just as difficult to explain many of the observed phenomena, especially those pointing to the liver, if this etiology were accepted, as with any other. Few pathologists refer at all to tubercle as a cause of diffuse hepatitis, and those who make reference to it say that it gives rise to no symptoms. Ziegler describes one form of tuberculous liver as exhibiting a general connective-tissue hyperplasia, the parenchyma being traversed by bands of fibrous tissue, in which are lodged gray or yellow tubercles (*Path. Anat.*, 1890, Band ii., p. 599). Saundby, in 1890, said that he had seen two cases of tubercular cirrhosis in which there was a tubercular network surrounding the lobules, and in the lobules a remarkable development of biliary canaliculi (*Brit. Med. Journ.*, 1890, vol. ii. p. 1459). Delafield and Prudden, speaking of tubercular hepatitis, say that it may be associated with cirrhosis (*Handbook of Path. Anat. and Hist.*, 1889). Coats, in his latest edition, makes no mention of the condition. Osler states that with eruption of miliary tubercles in the liver there may be a slight increase of connective tissue, which is, however, overshadowed by fatty change. "Practically," he says, "it is very rare, except in connection with chronic tuberculous peritonitis and perihepatitis, when the organ may be much deformed by a sclerosis involving the portal canals" (*Practice of Med.*). Pepper records a case following measles, in which jaundice was occasional; the liver was hobnailed. No history of syphilis could be obtained. Klein has described acute interstitial hepatitis as he found it in eight cases of scarlatina. R. P. Howard, of Montreal, in a paper on "Cirrhosis of Liver in Children," reports seven or eight out of sixty-three as being coexistent with tubercle.

Having been unable to find anything in the history of our case or in

the post-mortem appearances apart from the tuberculosis that would account for the occurrence of an interstitial hepatitis, we are constrained to believe that it resulted from irritation caused by the specific poison of the tubercle germs circulating in the blood. It could not have been the result of irritation by the localized tubercular nodules, since these were too few in number and too widely separated to account for a general hepatitis. The condition of the stomach and intestines was not such as to lead one to suppose that any fault in them was the cause. The points in the microscopic appearances which seem to add special strength to the view taken are: 1st, diffuseness of the process; 2d, large amount of cell infiltration present; 3d, necrotic condition of liver cells.

With regard to the first point nothing need be said, but of the second we may remark that such an inflammatory process is what one might expect where the poisoning was as acute as in this case. The comparatively small development of fibrous tissue is not what one would naturally look for were the process caused by prolonged absorption of irritative matters from the digestive tract or by retention of bile by obstruction. Alcoholism was excluded from the history of the case, and the liver had none of the characteristics of an atrophic cirrhosis; the deposit of bile-pigment was extremely small and confined to a few cells, none of the bile capillaries being plugged and dilated with it as so commonly seen in obstructive cirrhosis. A catarrh spreading from the duodenum might, of course, account for the passing jaundice, but not for the persisting hepatitis. The presence, moreover, of necrosed liver cells points rather to a toxine effect than otherwise. It has been shown that the toxalbumins of diphtheria and typhoid fever give rise to such a necrosis as described (*Johns Hopkins Hospital Bulletin*, March, 1892) and (Osler's *Practice of Med.*, art. "Typhoid Fever"). One of us has also observed a similar cell necrosis, with leucocytic infiltration, in a case of syphilitic cirrhosis.

The occurrence of tubercular pericarditis is worthy of note, since so few cases of this disease are on record. When she first came under observation there were signs of old pericarditis; these signs underwent no change and at the autopsy they were found to be due to old adhesions. Later, signs of fresh inflammation developed over the base of the heart and gradually extended downward to the apex. The moderate effusion that resulted was fairly rapidly absorbed and in five weeks after the first signs of pericardial disease showed themselves, all traces of the attack had disappeared. The history of the pericarditis contained nothing distinctive in itself; its tuberculous nature could be surmised only from the associated conditions.

A CLINICAL CONTRIBUTION TO THE SUBJECT OF
SYMPHYSIOTOMY.BY EGBERT H. GRANDIN, M.D.,
OF NEW YORK.

NEVER in the history of obstetrics has the motto *Festina lente* been more appropriate to be inscribed on the crest of physician and obstetrician than at present. We are apparently on the verge of a "symphysiotomy wave," born of the enthusiasm awakened by the reports from Italy and France of the wonderful results yielded by this rejuvenated operation. Needless to recall the great abuse resulting from the "abdominal section wave" which reached these shores from Birmingham, England, about twelve years ago, in order to sound a note of warning lest the obstetrician be led astray even as many of us were as gynecologists. Symphysiotomy in this country must be judged by the fruits it yields here, and until the harvest of cases is ripe as regards ultimate results, it will be wise to temper enthusiasm and to weigh the operation after the most judicial fashion. Every physician, every obstetrician, hopes in the bright future of the operation; for, this assured, embryotomy ceases to be justifiable on the living, and excessive pressure on the foetal brain by protracted forceps—moulding being avoided—the number of cranks, idiots, and epileptics in the world will decrease. We must not, however, allow these hopes to swerve us in the present toward an operation which, in this country, is only on trial. We must await the essential verdict of American obstetricians in regard to *the ultimate integrity of the symphysis*. Should it be proven in this country that close apposition, no interference with locomotion, no mobility at the symphysis is the rule, then, and only then, should the operation secure with us the standing it holds in Italy and in France.

At the present I would hold it may fairly be claimed that symphysiotomy should not have a mortality rate, where it is resorted to on a patient not exhausted by protracted labor, or by ineffectual attempts at delivery by other means and on a patient not septic. Other things equal, further, the child should be saved. Injury to the bladder and urethra is avoidable. Hemorrhage is only likely to occur where an improper incision is made, and if it do occur it may be controlled. Sepsis here, as elsewhere in surgery, means faulty technique.

My individual experience leads me to favor a primary incision extending upward from the pubic eminence. I regard the incision downward, to one or the other side of the clitoris, as faulty and unnecessary. I believe it to be better practice to avoid, where possible, the cutting of the insertion of the recti. The finger should be inserted between the recti, and, when hooked under the symphysis, should remain there in

order to guard against injury to the bladder and the urethra. The incision through the symphysis should be made from above downward, and from without inward. The subpubic ligament should be severed by cutting down on the finger and *not* by upward cutting by the Galbiati knife or its modifications. Whilst it is well to possess Harris's modification of this knife, in the average case a stout bistoury will suffice for the operation. The subpubic ligament *must be severed* in order to secure the separation at the symphysis which leads to increase in the pelvic diameters. When bringing the bones in apposition, after having effected delivery of the fœtus, especial care must be taken to depress thoroughly the urethra and the vesical neck, else, as happened to my first case, these portions of the urinary apparatus may be nipped and a vesico-abdominal fistula will result.

These, very briefly, are the general conclusions I am prepared at the present to advance, and they are based on the following clinical experience:

CASE I.—Mary, aged nineteen years; nullipara; at term. When I was called to this patient the membranes had been ruptured for four hours; the first stage was completed; the vertex was presenting, well flexed in the left anterior position. Notwithstanding strong uterine contractions the fœtal head remained wedged at the brim. The fœtal heart was 160 and irregular, the maternal pulse varied from 120 to 128. The pelvic measurements were:

Spines	8 $\frac{3}{4}$ inches.
Crests	9 $\frac{3}{4}$ "
Antero-posterior, about	7 "
Conjugata vera (under chloroform)	3 $\frac{1}{4}$ "

The pubes were deep and the sacral promontory projected in a sharp spine.

Version being contra-indicated, I applied the forceps, but I was unable by judicious traction to bring down the head. I at once elected symphysiotomy, and made a primary incision extending upward three inches from the pubic eminence. I separated the recti with my finger and inserted this under the symphysis. With an ordinary bistoury I made the section of the symphysis from above downward and from without inward to the subpubic ligament. The fœtal head being wedged at the brim, interfered greatly with the severing of the inferior ligament of the pubes by the Galbiati knife. On completion of the operation the pubes separated to the extent of 1 $\frac{1}{2}$ inches, this space being increased to the extent of 1 inch during difficult forceps extraction. Deep silk-worm-gut and superficial catgut sutures were used to bring the tissues together. During the pubic section and in bringing the bones together the urethra was depressed carefully.

The diameters of the fœtal head were:

Bi-temporal	3 inches.
Bi-parietal	3 $\frac{1}{4}$ "
Sub-occipito-bregmatic	3 $\frac{3}{4}$ "
Occipito-frontal	4 $\frac{5}{8}$ "
Occipito-mental	5 "
Circumference	13 $\frac{3}{4}$ "
Weight of child (a female)	7.1 pounds.

The posterior fontanelle had closed, and the anterior was two-thirds below the usual size.

The operation was performed on February 11, 1893. At this writing, March 31, 1893, the child is alive and thriving, and the mother walks without difficulty. The convalescence of this patient was unusually stormy. Two days after delivery a deep and extensive sub-mammary abscess was opened. On the seventh day a mural abscess broke through the line of incision (the result of using catgut for superficial sutures?); on the tenth day a *vesico-abdominal fistula* appeared; and later a catarrhal laryngitis and a double crural phlebitis. The fistula closed spontaneously; the patient was first out of bed on the fifteenth day, and walked for the first time on the thirty-fifth day. There exists close union at the symphysis, and no mobility.

REMARKS.—This woman could only have been delivered otherwise of a *living* child by the Cæsarean section, and symphysiotomy was elected in order to avoid stillbirth and embryotomy of the living child. The child *might* have been *dragged* through by forceps, but dead and at the expense of the maternal soft parts. Brute traction no longer, however, plays a part in scientific obstetrics.

The abdomino-vesical fistula was due to one of two causes: The foetal head being wedged at the brim, the neck of the bladder may have been injured during the insertion of that clumsy instrument—the Galbati knife; or, notwithstanding the care with which the urethra was depressed, the bladder was nipped by the pubic bones when they were brought in apposition. The accident, however it occurred, is preventable, and in nowise argues against the operation of symphysiotomy.

CASE II.—Mary, aged twenty-three years; nullipara; 4 feet 6 inches in height; infantile pelvis, with the following measurements:

Spines	9½ inches.
Crests	9¾ "
Antero-posterior	6¾ "
Conjugata vera (under chloroform)	3+ "

The patient came under observation about seven weeks before term. After consultation with my colleague, Dr. R. A. Murray, three separate attempts were made to induce premature labor. On two occasions glycerin was injected into the uterus, the patient being in Sims's position and the pelvis elevated. The first attempt was absolutely futile; the second attempt was followed by strong uterine contractions and a profuse discharge of serum. I next endeavored to induce labor by packing the cervical canal and the upper vagina with gauze. This also failed in the desired result. On February 20, 1893, spontaneous labor set in. I saw the patient with my colleagues, Drs. Coe and Jarman, and after thorough examination under chloroform, the decision was reached that symphysiotomy best assured a living child. Accordingly, with the kind assistance of these gentlemen, I completed cervical dilatation by the hand, performed symphysiotomy, and delivered by podalic version.

The steps of the symphysiotomy were similar to those just described, with the exception that the more slender Galbiati-Harris knife was used to cut the subpubic ligament. The foetal head being movable above the brim, this very essential part of the operation was not difficult. The pubic bones separated during extraction to the extent of 2 inches.

The measurements of the foetal head were as follows (the child being premature by about four weeks):

Bi-temporal	2 $\frac{5}{8}$ inches.
Bi-parietal	3 $\frac{3}{8}$ "
Occipito-mental	4 $\frac{1}{8}$ "
Occipito-frontal	4 $\frac{1}{8}$ "
Sub-occipito-bregmatic	3 $\frac{3}{8}$ "
Circumference	13 "
Male child, weighing	5.1 pounds.

The convalescence of the patient was uninterruptedly normal. She was out of bed on the twenty-first day, and walked for the first time on the twenty-fourth day. On March 23d, when examined in the erect position and whilst walking, there existed slight mobility at the symphysis, although there was close union. At this writing (March 31st), forty days after operation, the patient walks well; there is slight motion at the symphysis; the child is alive.

REMARKS.—This patient might have been delivered by forceps through protracted moulding of the foetal head: very likely, however, with resulting stillbirth, or, at any rate, with grave lesion (due to pressure) of the foetal brain. Herein, indeed, lies one of the great results to be predicated from symphysiotomy when it shall have been proven perfect in its ultimate results from the maternal standpoint. The wider my experience, the more the truth is forced upon me that many a deficient intellect might be traced to protracted labor and to the means resorted to for delivery—such as prolonged forceps traction from the pelvic brim or difficult extraction of the head after version.

In the year 1890 I performed the Cæsarean section twice under the relative indication. The measurements of the pelvis and the diameters of the foetal head were approximately like those in these two cases of symphysiotomy. (Vide *Transactions of the American Gynecological Society* for the year 1890.) Up to September, 1892, I was a determined advocate of the Cæsarean section whenever, other things equal, it was possible thus to avoid destruction of the living foetus. The future of this operation was most brilliant, its results were constantly being bettered. Under the new order of things I am obliged for the present to look upon symphysiotomy as an operation bidding fair to displace the Cæsarean section under the relative indication. It is my hope that the record of the former operation in this country will justify the shelving of the latter, more formidable operation. Whilst I propose to advocate and to perform symphysiotomy, it will be with exceeding caution until it shall have been clearly proven that the operation entails no ultimate dis-

ability. Then, indeed, we will have witnessed the dawn of the day when embryotomy of the living finds no justification. Until then, however, I would emphasize my prelude: *Festina lente*.

PSEUDARTHROSIS (INCLUDING ALL VARIETIES OF DELAYED AND NON-UNION): WITH ILLUSTRATIVE CASES.

BY ROSWELL PARK, A.M., M.D.,

PROFESSOR OF SURGERY, UNIVERSITY OF BUFFALO; SURGEON TO THE
BUFFALO GENERAL HOSPITAL.

- I. *Simple Delayed Union*. (May be caused by shock, old age, rhachitis, gestation, lactation, scorbutus, syphilis, cancer, paralysis, local unrest.)
- II. *Complete Separation; Detachment of Fragments; Non-union*. (May be due to above causes, faulty fixation, interposition of soft parts. The bone ends may be variously altered.)
- III. *Fibrous Union*. (With or without much deformity.)
- IV. *Osteophytic Pseudarthrosis*. (May be connected with tuberculosis, syphilis, cancer, hydatid cysts, etc.)
- V. *Fibro-synovial—True New Joint*.

I. SIMPLE DELAYED UNION.

When a bone which should have thoroughly consolidated after six or eight weeks has not become united after eight or ten weeks, we have a right to speak of it as a case of delayed union. It is not proper, however, to call it non-union, for union of the fracture may still occur. Delayed union is, therefore, a relative term, the time at which its use becomes proper being rather indefinite. The causes that may operate to lead to delayed union are numerous. Shock is not a common, but is still a recognized, cause. Old age is a common cause. Rhachitic children, or even elderly persons, are apt to have delayed union. The preparation of the foetus, or of the milk for the newborn, may make such a demand for alkaline salts that gestation and lactation may divert the necessary materials from the seat of fracture to the uterus or the breasts, and may thus act as causes of delayed union. Scorbutic patients often have delayed union or none at all. Syphilis, especially the tertiary forms, may delay the repair of a fracture. Cancer sometimes produces a condition of the system in which there is fragility of bone, and, by another manifestation of the same tendency, there may be delayed union after fracture. If a patient breaks a paralyzed and atrophied limb there is often not enough nutritive activity to bring about speedy repair. Any diathesis may tend toward non-union. Local unrest, which includes the failure to provide a limb with proper support in the way of splints, may also act as a cause of delayed union.

II. NON-UNION.

The next degree of pseudarthrosis, in the general sense, is absolute non-union; that is, actual separation and detachment of the fragments without even a fibrous connection. This may be due to causes already specified for delayed union, or to faulty fixation, or to the interposition of soft parts between the bone ends. On reflection, it seems strange that soft parts do not always get in between the broken ends of bone, and it is not to be wondered at, therefore, that fibres of muscle or fascia or some other soft tissue intervene between the fragments and retard union or prevent it altogether. By faulty fixation is meant the improper "setting," as the laity term it, of a broken limb.

III. FIBROUS UNION.

This may occur with great or little deformity. At times this is the utmost that can be expected of certain special fractures, as of the olecranon, coracoid, acromion, patella, and neck of the femur. But the fibrous form of pseudarthrosis alluded to in this classification refers especially to those cases occurring in the shafts of long bones or at joint ends, and implies either faulty treatment or faulty action on the part of the tissues and failure on the part of the callus to ossify as it ought to do or to go beyond the formation of fibrous tissue.

IV. OSTEOPHYTIC PSEUDARTHROSIS.

In this variety osseous new-formations jut out in various directions from the fragments. Outgrowths occur in dendritic or arborescent forms or they assume various *bizarre* manifestations. It is found most commonly in connection with tuberculosis, syphilis, cancer, and sometimes with hydatid cysts located at the seat of excitement—that is, about the fracture.

V. FIBRO-SYNOVIAL.

This last variety is the one to which the term false joint or new joint is appropriately applied. The ends of the bones are rounded off and often become eburnated inside the new capsule which forms about them and which corresponds very closely to the synovial membrane of a joint. It is analogous to an adventitious bursa. As time goes on the capsule becomes stronger, the fluid which collects within it serves to lubricate the cavity, and there is produced literally almost a perfect new joint with a capsular ligament, but, of course, without true lateral ligaments. Its movements are quite free, and it is, therefore, called a "flail-joint." This kind of false joint is classically illustrated in the case of Living-

stone, the African explorer, who was bitten by a lion, and who, as the result of exposure, more or less exhaustion, and the lack of proper care to insure physiological rest, developed a pseudarthrosis of the humerus.

SURGICAL TREATMENT TO STIMULATE THE REPAIR OF NON-UNION.

I. *Stimulation without penetration to the bone.* This consists in an endeavor to irritate the ends of the bone—for example, by grasping the limb firmly and rubbing the bone ends together, or, it may be, by leaving off splints and allowing the inevitable irritation to act as a stimulus to the throwing-out and ossification of callus. In simple delayed union these means are often sufficient.

II. *Stimulation and irritation of the seat of fracture by something introduced from without.* The best-known method is by the introduction of a drill, in order to make a number of punctures, penetrating the bone at various points. This operation, devised by Brainerd, is a kind of insult to the bone-tissue, and is followed by a reaction with a little bleeding and cellular activity, which is often sufficient to make the bone unite. It has also been suggested to introduce from without, by means of a hypodermic needle or a long, fine hollow tube, some active chemical irritant, like acetic acid or tincture of iodine or alcohol, by means of which a very direct inflammatory action may be evoked. This is an endeavor to bring about the natural condition of exudation and then of ossification of the exudate, which is essential to the consolidation of a fracture. It is a method seldom resorted to at present, for it has been found that if the method by bone-drill is ineffective, this method will not do much; and it is not exactly scientific, for it sets up an inflammation which may possibly be followed by suppuration, as illustrated in a case hereafter reported.

III. *Exposure of the parts and mechanical fixation.* The third and most radical method consists in cutting down at the seat of fracture and fastening the bones together. For example: *a.* By a long drill, which is to be removed later. *b.* By drilling the bones and inserting a perfectly aseptic steel screw, ivory peg, or other similar fastener, the parts uniting and encapsulating it. Once in a while the foreign body used may invite exudation and softening, and may require removal later. *c.* Still another method consists in drilling and uniting the bone ends with silver wire, which is usually left in place, and which becomes encapsulated and does no harm. *d.* Again, some animal and therefore absorbable material may be used, such as silkworm-gut. It is immaterial just how this is inserted and just what material is used. It may be necessary in some cases to bevel the ends of the bones; in others it may be sufficient to saw them off squarely. Volkmann suggests rabbeting or mortising them together, but his method can seldom

be carried into practice with such accuracy as may be shown in diagrams found in literature on the subject.

CASE I. *Ununited fracture of the femur; attempt to wire the fragments found impracticable; amputation of thigh; death from shock.*—This patient was a criminal who, two or three months before operation, in the attempt to escape from jail, had fallen from a second-story window and sustained a fracture of the femur but a short distance below the lesser trochanter, along with other injuries which were of minor character. The upper fragment being so short, was pulled up by the psoas and so far displaced that all attempts to secure a good result with perpetuation of the proper axis of the limb were unavailing. Even extension in a nearly perpendicular direction failed. There was not only failure to get the fragments into line, but later complete failure to obtain union was apparent. Accordingly, on December 24, 1884, an attempt was made to suture the fragments together. The incision was made on the outside of the thigh, and it was then seen that the lower fragment lay beneath the upper, the overriding being to the extent of $4\frac{1}{2}$ cm. There was no true callus, but the periosteum was loosened, and where callous should have been found there was a mass of friable granulations. By powerful traction upon the leg and by the use of the bone elevator, after freshening the bone surfaces, it was finally possible to engage the ends of the fragments in something like their proper position; but then, owing to the rigid fixation of the upper portion in its wrong position, mainly from contraction of the psoas, the proper line of union could be nowhere nearly obtained. Moreover, the periosteum was disintegrated and the bone texture materially altered, being extremely hard and very slightly vascular. Then two inches of the lower fragment was removed and the parts were drilled, and two efforts were made with strong silver wire to bring the ends into proper apposition. Each time the wire sutures broke, although the second time I used three strands of stout wire twisted together. As it thus appeared that it would be impossible to hold down the upper fragment into anything like proper position, and despairing of being able to accomplish the original object of the operation—further exploration, moreover, revealing several necrotic pieces of bone which had been separated from the shaft and were lying behind the field of operation—I allowed the patient to recover sufficiently from the anæsthetic to gain his consent to an amputation. He was then again anæsthetized, and amputation by lateral flaps was made, utilizing, as far as possible, the first incision. Several loose fragments of bone were found imbedded in the tissues behind the main fragments, one a piece 8 cm. long, the others quite small. As nearly as I could interpret the condition the upper fragment of the femur had been split by the lower, the posterior portion of the split fragment having been entirely loosened. The patient died on the evening of the same day, having never completely rallied from the shock of the prolonged operation.

CASE II. *Ununited fracture (pseudarthrosis) of the left radius; operation; recovery.*—Peter K., aged twenty-nine years, on July 21, 1884, fell from a wagon, breaking both bones of the left forearm near their middle. The ulna united, the radius failed to unite. January 13, 1885, the patient was operated on in my clinic, under the spray which was in use at that time. I cut down on the seat of fracture, and found a very perfect pseudarthrosis with eburnated bone ends and a complete capsule.

With gouge and knife I freshened the bone edges, which fortunately were oblique, and then drilled and wired them together with silver wire without the necessity of resecting the ulna or perceptibly shortening the radius. In this case, bony union was a little slow, but finally it became quite firm.

CASE III. *Ununited fracture of the clavicle; operation; recovery.*—Robert McC., aged fifty-five years, late in November, 1885, fell and broke his left clavicle in its middle third. January 19, 1886, he entered the hospital with a well-nigh useless arm, with vicious position of the clavicular fragments, there being much shortening and the outer end of the inner fragment projecting two and one-half centimetres over the outer fragment and in front of it. The shoulder seemed to be stiffened, and motion in every direction was limited by one-half. Crepitus and mobility could be felt at the seat of fracture. January 30, 1886, the patient was operated on in my clinic, the ends of the bones were freed from their entanglement, which consisted for the most part of firm fibrous tissue, were then sawed obliquely and after being drilled were fastened with a double silver wire, whose ends were turned in between the fragments. There was considerable trouble with hemorrhage from the periosteal surfaces. In this case the skin wound united by primary intention, and the patient left the hospital in good condition. Some two years later he turned up in the clinic again with a recent fracture of the other clavicle, and at this time opportunity was offered for examination with regard to the final result of the operation. Motion of the shoulder was perfect and the arm was as useful as ever. The recent fracture healed kindly under a retentive dressing without the operation for which the patient had asked.

CASE IV. *Ununited fracture of left femur; operation; recovery.*—Fred. K., aged twenty-five years, in January, 1883, became entangled in some revolving shafting and was thrown many times against some beams. Among other injuries he sustained a comminuted fracture of the left femur in its upper third, and another near the middle of the same bone. The right fibula and some ribs were also broken. He was attended by Dr. J. C. Green, who subsequently referred him to me. He recovered from all of these injuries save that the fracture in the middle of the left femur never united, and in consequence he had a flail joint, and the limb was shortened seven and one-half centimetres. He was wearing a cumbersome apparatus and was walking with the aid of two canes. After long deliberation he decided in favor of operation. November 4, 1886, nearly three years after the original injury, an operation was performed at his house; the incision was made on the outer and posterior aspect of the thigh; both bone ends were conically rounded off, and they overlapped about five centimetres; they were firmly united by a fibrous band. It required no small effort to loosen them, and then to remove about two centimetres from each fragment by means of the chain-saw; they were then drilled and a strong double silver wire was passed through the holes in such a way as to link the bone ends together. Bone drainage-tubes were used. On the completion of the operation the leg was nearly eight centimetres longer than it had been previously. It was dressed on an anterior suspension splint including the whole body, and recovery followed slowly, with a little suppuration of the wound. February 10, 1887, the patient was allowed to get

up and use crutches. Consolidation was slow in this case, but the ultimate result has been completely satisfactory.

CASE V. *Pseudarthrosis of both bones of right leg; operation; death from tetanus.*—Albert B., aged three years and two months, was brought to me from Allegany county; the patient seems to have suffered from rhachitic curvature of both legs during the latter months of infancy. According to his father's statement, a physician undertook to straighten the legs when the child was six months old. He etherized the child while no one was permitted in the room, and brought him out to the parents with the legs done up in splints. The present condition has existed ever since the splints were removed. January 11, 1887, I found an ununited fracture with pseudarthrosis of both bones of the right leg, of the tibia a little above the middle, and of the fibula at the middle. There was marked angular deformity and lameness. On the following day in the clinic both false joints were exposed by incision, the bone surfaces freshened, and the ends of the tibia were united by wire suture after drilling. No suture was used for the fibula. The conventional dressings were applied and the leg was dressed in a tin splint. January 17th the wound was re-dressed for the first time and found in good condition. The patient's pulse and temperature were a little high. By evening there was apparent a phlebitis of the veins of the thigh, which had developed very rapidly. On the following day his temperature had risen to nearly 107°, and he had had several typical tetanic convulsions. At five o'clock P.M. his convulsions had assumed well-marked characteristics of tetanic opisthotonus, and he died the same night. This is the only patient I have ever had in whom tetanus has followed an operation of my own, and I am at a loss to account for it according to the views at present received with regard to its pathology, and prefer to leave the case unexplained rather than offer an unsatisfactory hypothesis.

CASE VI. *Compound multiple fracture of inferior maxilla; operation; recovery.*—J. J., aged twenty, of Warren, Pa., on June 30, 1880, was thrown out of a wagon on to a heap of stones, and besides sustaining numerous severe bruises broke his lower jaw in two places, nearly symmetrically, about 2 cm. on either side of the symphysis. The fracture on the left side was compound, both externally and internally. The patient was brought to me by Dr. Baker on July 5th for operation. The two fractures were exposed by an incision along the lower margin of the bone, and after drilling on each side of each fracture the middle fragment was held in proper apposition by a single twisted silver suture at each point. The ends of the wire were left projecting through the wound, both for drainage purposes and to facilitate their subsequent removal. Inside the mouth silver wire was also used about the teeth for additional protection. The silver sutures were subsequently removed, and the result in this case was all that could be desired.

CASE VII. *Fracture of olecranon; separation of fragments; secondary suture; recovery.*—Harry G., aged seventeen, on December 8, 1890, while away at school, fell upon the ice, striking the elbow and fracturing the olecranon. The arm was dressed in the straight position, but no satisfactory effort seems to have been made to hold the fragment in position. Two weeks later the arm was relaxed into a slightly flexed position and put in plaster-of-Paris. This was taken off on December 29th, and he was brought to me by the late Dr. Burwell. There was at this time a

separation of 2 cm., and the fragment was quite movable. Operation being suggested and accepted, it was performed at the patient's home on January 2, 1891. By this time the separation amounted to nearly 3 cm. A straight incision over the olecranon was made, the bone surfaces carefully evened and freshened, and, after drilling, two silkworm-gut sutures were introduced, by which a very accurate approximation was effected. The wound was closed without drainage, and the arm dressed in the straight position. Recovery was perfect and rapid, and the patient now has as useful an arm as ever.

CASE VIII. Compound fracture of leg ; resection of both bones and suture ; recovery.—Michael D., aged twenty-two, on October 2, 1891, fell from a bicycle and sustained a compound fracture of the right leg, the tibia being not only broken, but one fragment was entirely separated from its bony connection and was attached only by adhesions to the soft parts around. At that time he was anesthetized and a silver wire was wrapped completely around the bone by the house surgeon, the wound being closed and an aseptic dressing applied. This wound healed almost completely, but there was absolute failure of the bone to unite. On October 31, 1891, there being still no attempt at union, I operated in clinic, and resected 5 cm. of the tibia and fibula, and fastened the ends of the fragments of the tibia together with silver wire, after drilling. On November 11th the first dressing was made. At this time there was no apparent attempt at union. The leg was re-dressed in a splint and consolidation took place slowly, but finally perfectly, and the patient was discharged some weeks later with a useful leg.

CASE IX. Fracture of femur ; non-union ; operation ; recovery.—Stephen McG., aged thirty-nine, on November 3, 1891, was struck by an engine and sustained a fracture of the right femur near the knee, and of the left clavicle near its middle. The clavicle united without incident, save that a small loose fragment which presented beneath the skin was aseptically removed under cocaine anesthesia. The leg was dressed with the long splint and traction. This dressing remained undisturbed for six weeks, but upon its removal it was apparent that absolutely no union nor even attempt at it had occurred. It was therefore left without splint, but with traction continued, hoping that by friction and excitation of movement, callus might be thrown out. In this, too, disappointment resulted. Finally, January 6, 1892, he was operated upon in clinic. With great difficulty and after a long incision, I dovetailed the bone ends together after Volkmann's method, and held them in place by a bone drill passed through the soft parts from above, and with a silkworm-gut suture wrapped around the bone ends and tied tightly. Drainage was made with a decalcified bone tube, and fixed dressings were applied. Three weeks later, upon the first dressing, considerable consolidation had occurred, and the patient was discharged after a month, able to go about on crutches. He has not since been heard from.

CASE X. Ununited fracture of clavicle ; operation ; recovery.—Celia H., aged five, of Hornellsville, N. Y., fell fifteen weeks before and broke her left clavicle. There was found considerable overlapping of fragments, with non-union. November 28, 1891, operation was performed in clinic. The bone ends were cut down upon, disengaged from their vicious fibrous union, the over-riding fragments freshened, drilled, and held together with a silkworm-gut suture. No drainage was used.

December 5th the first dressing was made, and primary union of the wound found, with already considerable consolidation of the fragments.

CASE XI. *Pseudarthrosis of radius and ulna; operation; probable recovery.*—John H., aged thirty-eight, of Allegany county, in November, 1888, had his left arm wound up in shafting, and both radius and ulna were broken about the junction of the middle and lower thirds. Previous to his coming to the Buffalo General Hospital three operations had been performed, the last by the exposure of the pseudarthrosis, but without the introduction of wire sutures. January 13, 1892, operation was performed in clinic. An incision was made upon each of the false joints, which were found to be perfect with eburnated bone ends and distinct fibrous capsules, inside of which several rice-grain bodies were found. This fibrous investment was dissected away and the four bone ends resected, not squarely but bevelled. They were then fastened together by silkworm-gut. At one point an old unabsorbed silkworm-gut suture was found, which had evidently been inserted by my predecessor. The wounds were closed without drainage, the arm placed on a straight splint. Previous to this operation there had been almost a right angle in the forearm. The patient remained in the hospital three weeks. Just before he left the old dressings were removed, and it was found that there was some motion still remaining. The forearm was therefore enclosed in a plaster-of-Paris dressing, and the patient was sent home. A month later he was examined; complete consolidation had not yet occurred. The plaster-of-Paris was renewed, the patient's urine was examined, and not being found alkaline nor requiring internal administration of acids, he was advised to take the compound syrup of the hypophosphites in maximum doses, and he has not since been seen.

CASE XII. *Compound fracture of tibia and fibula; non-union; operation; recovery.*—Nellie B., aged thirty-two, January 27, 1892, while under the influence of liquor, fell down stairs and sustained a compound fracture of the right leg. She was brought at once to my clinic, which was in progress at the time of her arrival. Being anæsthetized, I thoroughly cleansed the part, and, on examination, found that both bones of the right leg were broken at the junction of the lower and middle thirds. There was considerable bruising and bleeding from a small puncture rather to the inner side of the tibia. At this point I made a long incision, and found one piece of the tibia, 7 cm. long, entirely loose. The balance was broken in such a way that I was able to pass two silkworm-gut sutures and one double catgut suture around the obliquely broken fragments, and hold them in excellent apposition. The wound was carefully sprayed with hydrogen peroxide solution and dressed without drainage. Three weeks later, on re-dressing the limb for the first time, it was found that there had been practically complete failure to consolidate. The patient was again operated upon in clinic, and 5 cm. of each bone was resected, the tibia being again fastened together. From this operation she made a slow but perfect recovery.

CASE XIII. *Ununited fracture of femur; two operations; senility and necrosis preventing reunion.*—William W., aged sixty-five, a decrepit old man, on August 4, 1891, was run over by a wagon and sustained a compound fracture of the left femur, just above the condyles. His leg was dressed at home in a fracture-box, with traction. October 3d, when the dressings were removed, it was found that there had been no union. October 7th, on operation in clinic, a long incision was made across the

knee from the inner border of the tendo patellæ downward, upward, and outward, exposing this tendon, as well as the bone beneath. I found the bone ends irregularly shaped, without the slightest attempt at union. With forceps and sharp spoon I scraped and cut away the bone until I had the surfaces nearly even and fairly accurately apposed. An effort to fix them with a long drill was futile, so I held them as well as I could in an antiseptic dressing, with an absorbable tube drain, and bound firmly on a splint. Union of the wound was perfect. The dressing was left undisturbed for six weeks. On its removal it was found that not the slightest attempt at reunion was apparent. The limb was then left on a pillow and repeatedly moved every day, but still no result was obtained, and finally, at the patient's urgent request, I operated again on January 13, 1892, in clinic. This time a long external incision was made. I found that now a considerable portion of the lower end of the shaft of the femur above the original injury had become necrotic, although covered with a shell of new and living bone. All this I removed with the chisel, and finally resected about 5 cm. of the shaft with the chain saw. I also freshened, as well as I could, the upper end of the lower or condyloid fragment, but could devise no way to hold the fragments in apposition other than by binding them firmly upon a splint. The wound was closed with catgut drainage. This time, also, it healed perfectly *per primam*, but again there was absolute failure to throw out callus or form any union. The man stayed in the hospital several weeks longer, but I could suggest nothing further for him save amputation, which he declined. He was then removed to his home, no better off than before.

CRANIAL DEFORMITY AND OPTIC-NERVE ATROPHY.

BY HARRY FRIEDENWALD, A.B., M.D.,
OF BALTIMORE, MD.

THERE are three classes of congenitally abnormal crania: 1, The enlarged skulls of hydrocephalus; 2, the very small skulls or microcephali; and 3, the variously deformed skulls.

The last named, to which I wish to draw attention in this paper, are produced by the too early union or synostosis of the bones that make up the cranium, and the peculiar deformity depends upon which sutures are prematurely closed. If it be the frontal suture, then the deformity will consist in a very narrow forehead and very wide head behind, and is known as trigonocephalus. When the synostosis is along the sagittal suture it gives rise to the long scaphocephalus or boat-shaped head, with the depression across the middle.

The general rule is that if there is any interference with the early growth or extension of the cranial cavity in one part there will be compensatory development in other parts; the deficiency of one portion together with the excessive development of the others constitute the peculiar deformities under consideration. It would be impossible for

me to name all the deformities that have been described. I wish to mention but one in addition to those named above, the *Thurmschaedel* or steeple-shaped skull, known as oxycephalus, which is due to premature "synostosis of the parietal with the occipital and temporal bones, with compensatory development in the region of the bregma."

These many varieties of cranial deformity form a subject of great interest to the neurologist and alienist on account of their relation to epilepsy, idiocy, insanity, and crime. While it is of less importance, it is certainly not of less interest to the physician to study their relation to optic-nerve disease and to blindness.

To illustrate this I shall report the following case:

The patient is an intelligent salesman, aged twenty-six years. There was no blood relationship between his parents, who were both healthy, as are likewise his brothers and sisters. There is no mental trouble in the family. His head, deformed since birth, presents a typical example of

FIG. 1.

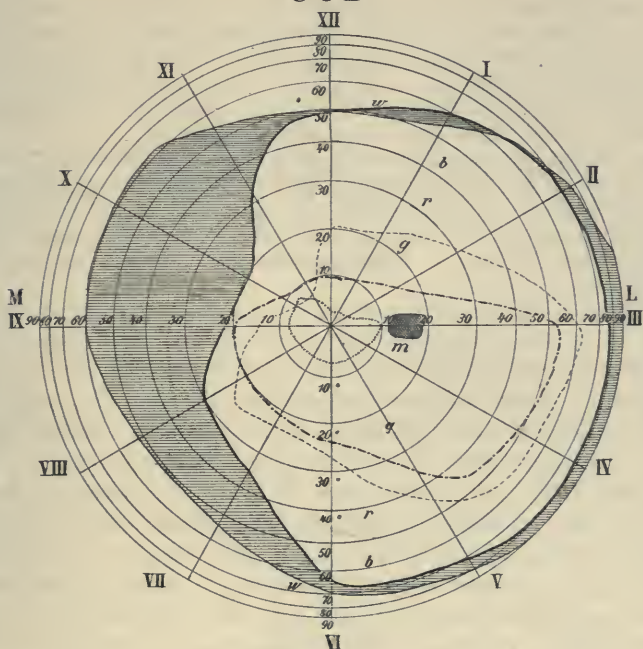


1. Circumference (50.5 cm., from which deduct 6 per cent. for skin and hair, making) 47.5 cm. (Average in men, 52 cm.)
2. Naso-occipital arc (34.5 minus 6 per cent. leaving) 32.4 cm. (Average 32 cm.)
3. Naso-bregmatic arc, 15 cm. (Average 12.5 cm.)
4. Bregmato-lambdoid arc, 11 cm. (Average 12.5 cm.)
5. Binauricular arc (35.5 cm., from which deduct 6 per cent.) 34.2 cm. (Average 32 cm.)
6. Antero-posterior diameter, 16.4 cm. (Average 17.7 cm.)
7. Greatest transverse diameter, 14.7 cm. (Average 14.6 cm.)
8. Binauricular diameter, 11.9 cm. (Average 12.4 cm.)
9. Distance of bregma from point in median plane midway between meatus, 13 cm. (Average 12.4 cm.)
10. Facial length, 13.3 cm. (Average 12.37 cm.)
11. Empirical greatest height, 14.5 cm. (Average in men, 13.3 cm.)

The peculiar deformity is prominently shown when measurements 1 and 11 are compared.

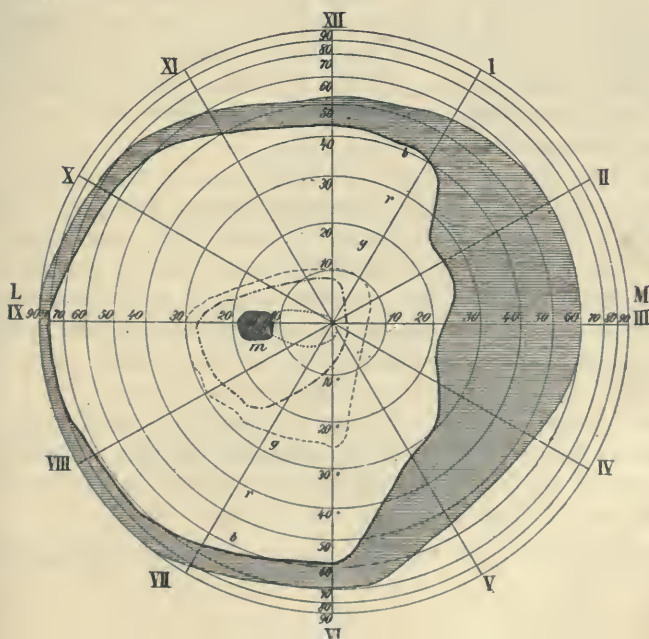
FIG. 2.

COD



White —————
 Blue - - - - -
 Red - - - - -
 Green - - - - -

COS



steeple-shaped skull, as is seen in the sketch of his profile and by the appended craniometrical figures.¹ At school he found that his sight was defective, the left eye being the worse. Since his school days his sight has not changed appreciably. He suffered from severe headaches until his sixteenth or seventeenth year, but since then they have been rare and mild. The eyeballs are bulged slightly forward.

The ophthalmoscopic examination made November 21, 1891, revealed atrophic papillæ which were grayish-white and not transparent, so that the lamina cribrosa was not visible; the papillary edges were slightly blurred and irregular. The arteries and veins presented no abnormality. (They were not tortuous.) It was evident that this is a case of post-neuritic atrophy.

The vision of the right eye is 8/XXIII, 8/XII partly, that of the left eye 8/XVIII. The vision cannot be improved by glasses. The fields of vision of both eyes are very much contracted on the nasal sides. (See Fig. 2.)

The history as well as the cranial and ophthalmoscopic appearances of hitherto recorded cases (see table) are in the main like the one just presented, as will be seen by referring to the list classified below, which are all that I can find reported since V. Graefe published the first in 1866. Of the seventeen cases (including the one above), *nine are properly classed among the steeple-shaped skulls* (Nos. 2, 7, 8, 9, 11, 12, 13, 14, 15, 17), and three are long heads (Nos. 1, 3, 10). In almost all there was post-neuritic atrophy of the optic nerve, or the papillitis itself was still visible. The visual power varies from almost full vision to total amaurosis; the field of vision wherever mentioned is found to be much contracted. The blindness came on unnoticed in early childhood in most cases, or was perhaps congenital (?). In case No. 3 of the table, the child when examined first was five years old and the neuritis was still active. I think it is very probable that in most cases it dates from the first few years of life. In none did it come on late in life. The intelligence of most of the patients is noted as being normal, though two suffered with epileptic convulsions. It is curious that fifteen of the seventeen cases are males.

Three cases of post-mortem examination are on record (Nos. 2, 15, 16), and in these narrowing of the optic foramen, with general hyperostosis or thickening of the bones, is noted. Still, most agree with Michel, who published one of these three cases, that as constriction of the optic foramen is rare, the immediate cause of the optic-nerve affection in most cases is to be sought in meningeal changes and in hydrocephalic conditions of the brain. At the same time stenosis of the optic foramen must be looked upon as a very important factor.

Virchow, who examined a number of Hirschberg's cases, believes that the cranial deformity and also the blindness are often to be referred to the same cause, namely, an inflammatory affection of the dura mater and the bone. Hirschberg concurs in this view.

¹ The cranial measurements were made according to Peterson, *New York Medical Record*.

TABULATED CASES OF CRANIAL DEFORMITY AND OPTIC-NERVE ATROPHY.

Reported by	Sex.	Age.	Deformity.	Vision.	Ophthalmoscopic appearance.	Autopsy.	Remarks.
1. v. Graefe, Arch. f. Oph., Bd. xii. No. 2, p. 133.	M.	8	Long, narrow skull.	Complete blindness, which came on suddenly.	Papillo-retinitis.	.....	Pupils widely dilated; patient cured; mother epileptic, father drunkard and suicide; other children died young.
2. Michel, Archiv. d. Heilk., xiv. p. 39; also, Handb. d. Kinderkr.	M.	15	Steeple-shaped skull.	.....	Neuritis followed by atrophy	Hyperostosis of skull; foramina optica narrow; pachymeningeal thickening over cortex.	Probably hereditary syphilis.
3. Hirschberg, Centralbl. f. Augenheilk, Jan., 1883.	M	5-14	Scaphocephalus (Virchow).	R. = $\frac{15}{cc}$ L. = 0 Field of vision concentrically narrowed to about 20° all around; blindness came on gradually and unnoticed. L. divergent.	When first examined, optic neuritis, later atrophy.	.....	Had convulsions; eyes prominent.
4. Hirschberg, loc. cit.	F.	3	Great bulging of temporal region especially on the right side (Virchow).	Slight visual power; reduced gradually.	Neuritic atrophy.		
5. Hirschberg, loc. cit.	M.	15	Synostosis of sagittal suture with very broad forehead (Virchow).	Vision defective since early youth. R. = $\frac{15}{cc}$ L. almost blind and divergent. Right field reduced about 10 or 20°.	Neuritic atrophy.	.....	Had convulsions; intelligence fair.
6. Hirschberg, loc. cit.	M.	4½	Leptocephalus (Virchow).	Gradual blindness during first year; after that time complete.	Neuritic atrophy.	.....	Peculiar cranial deformity noticed when born.
7. Hirschberg, loc. cit.	M.	20	Skull narrow and high.	R. = $\frac{15}{xx}$; field of vision normal. L. counts fingers at 5' (ex-centric). L. divergent.	Neuritic atrophy.	.....	Deformity noticed when born; intelligence good.
8. Hirschberg, loc. cit.	M.	7	Steeple-shaped skull.	R. = $\frac{15}{xx}$; field of vision fair. L. = 0.	Papillæ atrophic (light greenish-white color.		

Reported by	Sex.	Age.	Deformity.	Vision.	Ophthalmoscopic appearance.	Autopsy.	Remarks.
9. Hirschberg, loc. cit.	M.	9½	Steeple-shaped skull.	$R. = \frac{15}{xx}$; field of vision very narrow, about 20° in every direction. L. = 0 divergent.	Atrophy.	.....	Maternal grandfather had same cranial deformity; intelligence good.
10. Vossius, Klin. Monat. Zehender, 1884, p. 172.	M.	7½	Long skull, temples very wide, glabella broad, forehead low, and rises very slantingly.	R.=0. L. counts fingers at 8'. Divergence.	Atrophy, blurred papillary edges (probably neuritic, H.F.)	.....	Intelligence normal.
11. Stood, Zehender's klin. Monat., 1884, p. 241.	M.	33	Occipital portion undeveloped; steeple-shaped? (H. F.)	Blind since childhood. $R. = \frac{1}{0}$ L. = $\frac{1}{00}$ Divergence; nystagmus.	.....	.....	Frequent convulsions (epileptic?) intelligence normal.
12. Manz, Bericht der Oph. Gesells., Heidelberg, 1887.	M.	50-60	Steeple-shaped skull.	Had some vision as child, but gradually lost it almost entirely.	Post-neuritic atrophy.		
13. Manz, loc. cit.	M.	40	Steeple-shaped skull.	Had slight amount of vision, but lost it almost entirely after variola. R.=0. L. counts fingers.	Post-neuritic atrophy.		
14. Manz, loc. cit.	M.	young man	Steeple-shaped skull.	Blind since early childhood; slight perception of light in left eye	Post-neuritic atrophy.		
15. Manz, loc. cit.	M.	40	Asymmetrical steeple-shaped skull.	R.=0. L. about one-half examined, due to papillitis. Vision became normal, leaving a permanent defect in the field of vision.	R. old atrophy. L. fresh papillitis (due to intra-cranial tumor).	Cause of death: osteosarcoma on inner surface of right parietal and temporal bones. Base of skull very irregular. Foramina large and edges sharp, but optic foramina narrow.	Died at age of 40. The deformity of the skull was old, the tumor recent.
16. Ponfik, original not accessible, quoted by Manz.	...	...	Deformed skull.	.....	.....	Stenosis of optic foramina.	Details not accessible.
17. H. Friedenwald.	M.	28	Steeple-shaped	$R. = \frac{8}{xviii}$ L. = $\frac{8}{xviii}$	Post-neuritic atrophy.	.....	Intelligence very good.

I should ascribe case No. 1, in which total blindness came on very rapidly and soon disappeared, to hydrocephalus.

The question, I think, admits of still another explanation, or at least of another factor in the causation of the optic neuritis. The cranial deformity is due, as was pointed out above, to an enlargement of one part of the skull to compensate for the restricted development of another. Is it not probable that this compensatory enlargement offers more resistance to brain growth than does the normal enlargement, and that, during the early years of life, when brain growth is most active, there are periods when this resistance means such increase in intra-cranial pressure as would be produced by the growth of intra-cranial tumors? In other words, is it not possible that in many cases the optic-nerve affection is due to temporary increase in intra-cranial pressure? Certain it is that the optic-nerve affection, the optic neuritis which is produced, is such as would be present if this were the cause.

I make this suggestion not simply for its theoretical interest, but because it may give us the solution of the treatment of this otherwise incurable affection. The last few years have shown that brain and skull surgery has great possibilities. In epilepsy and idiocy from impeded cranial growth we have reason to hope for many cures, if the cranial vault is trephined and weakened, and thus allowed to expand. I believe that optic neuritis in children when due to cranial deformity should be put down similarly as a possible indication for trephining. Case No. 3 in the table might thus come under this head. If in such a patient we would be able to find any other signs of increased intra cranial pressure, I do not think that the operation would be out of place.

In microcephaly blindness is rare, as we would expect *à priori*, at least if we accept the view of Broca, that commonly this condition is primarily due to impaired development of the brain, and not to interference offered to its growth by the cranial bones. Still there may be cases where this last explanation holds, and in some of these we may expect optic neuritis.

The consideration of the relation of hydrocephalus to blindness is beyond the province of this paper.

BIBLIOGRAPHY.

- V. Graefe: Arch. f. Ophth., xli., No. 2, p. 133.
 Michel: Arch. d. Heilkunde, xiv., p. 39.
 Hirschberg: Centralbl. f. Augenheilk., 1883 (which includes cases published previously by himself and Schüller).
 Leber: Graefe and Saemisch, v., p. 805.
 Michel: Handb. d. Kinderkrankh.—Gerhardt, Bd. v. Abth. ii., p. 515.
 Manz: Berichte d. Ophthal. Gesellsch., Heidelberg, 1887, p. 18.
 Gowers: Manual of Ophthalmoscopy. Third Amer. ed., p. 180.
 Stood: Klin. Monats. f. Augenheilk., 1884, p. 241.
 Vossius: Klin. Monats. f. Augenheilk., 1884, p. 172.
 Ponfick: Bresl. ärztl. Zeitschr., No. 21, 1886.

NEUROSES AND ARTHROPATHIES: ARE THEY RELATED?

BY EDWARD BLAKE, M.D.,

OF LONDON, ENGLAND.

IN the May number of *THE JOURNAL*, 1892, the following query was raised by two distinguished members of the Harvard staff:

Is there any connection between chorea and rheumatism?

After an erudite statement of arguments for and against, and the quotation of many weighty authorities, the question may be said to have remained very much where it originally stood.

It will, perhaps, conduce to the clearness of our conceptions if we first try to establish the signification of that rather vague term "rheumatism" on some definite foundation.

I will, therefore, begin by defining what I mean by "rheumatism."

By acute rheumatism I mean multiple or diffuse myo-synovitis, whether septic or traumatic in origin, and whether it be complicated or not with cardiac disturbance.

By chronic articular rheumatism, I understand a neurotic dystrophy of tissue, usually preceded by tachycardia and other nerve changes; accompanied by peculiar modifications of the mucosa, the skin, including the hair and the nails, and succeeded by chondro-synovitis.

As there is no histologic difference between the chondritis of gout and the chondritis of rheumatism, we may, for our present purpose, view them as identical, at least during their acute stadia.

The positions that I seek to establish are as follows:

1. That there is a relation between chorea and chondritis.
2. That the nexus which unites them is a common causation.
3. That the relationship is not confined to chorea and chondritis, but that it exists with regard to the neuro-psychoses and all the arthropathies generally.

To establish this etiologic community, we must not only pass in review the ordinary causes of chorea, and see if they have the common property of inducing chondritis, but we ought also to scrutinize critically the supposed causes of rheumatism, and ask ourselves if they possess the undeniable power of causing chorea.

Here we come face to face with a very curious rule about which I have collected many thousands of highly interesting facts. A few of them have already appeared in *THE JOURNAL* in February, 1892; others were published in Philadelphia¹ last September.

It is, that the causes of chorea in woman are prone to induce rheuma-

¹ Septic Intoxication. F. A. Davis & Co.

tism in man. This, of course, holds good during adult life; in childhood there are many exceptions. For example, there is no evidence that intestinal parasites, which so frequently bring about St. Vitus's dance, will cause rheumatism.

But when we turn to the distressing emotions of the mind, the matter assumes a different aspect.

A. *Mental disturbance.* High on the list of the common causes of chorea stands *fright*. And anger will certainly accentuate chondritis in the gouty.

B. *Physical shock* will determine an acute accession of multiple synovitis of podagra or a persisting chorea.

C. *Alcoholic excess* predisposes to both these conditions.

D. *Uric acid* leads to neuro-psychoses in women, to chondro-synovitis in men.

E. *Septic matter*, as from gonorrhœa, marsh miasm, dyspepsia, and the so-called "zymotics," is prone to cause neuroses in women and various forms of arthritis in men.

F. *Lead* is one of the most remarkable examples of the elective affinity of a given poison for the locomotor apparatus in man and for the nervous system in woman. It would be foreign to our purpose to enter here into minute details; besides, the matter has been fully worked out elsewhere.¹

It will suffice to remind the reader that a woman who is poisoned with lead develops that particular neurosis to which she may be prone, whilst men manifest chondritis or else a myopathy.

G. *Arsenic.* The tremors and twitching of arsenic are well known to simulate chorea; not so generally recognized is the fact, recorded in THE JOURNAL in the February number of 1892, that this drug has caused well-marked rheumatic gout.

H. *Mercury.* Mirror-makers suffer from mercurial tremor. Choreic movements of the extremities have been described as a result of mercury by various observers, as Rummel, Taylor, Pernerl, Kussmaul, Leroy, Schmitz, and Pleischl. Rheumatic results of salivation have been recorded by Kussmaul, Keller, Colson, and Vallon.

Enough has been said, I think, to show that the causes of chorea are the causes of chondritis.

The converse should, of course, hold good, viz., that the obvious causes of rheumatism are causes of chorea. But this is not so easy to prove. Innutrition, exposure, traumatism, do not seem, at first glance, to be the great etiologic factors in chorea; nevertheless the possibility that they may stand in such a relation assumes larger dimensions when we reflect that probably all act by arresting metabolism, and that they thus lead

¹ Sepsis and Saturnism. F. A. Davis & Co.

to a loading of the nerve centres with ptomaines. Add to these auto-toxic states the heterotoxic influence of certain well-known poisons, as lead, arsenic, mercury, carbon disulphide, alcohol, and the gonorrhœal virus, and we have a fairly complete group of agents capable of inducing chorea as well as rheumatism.

It appears as if we doctors are so much occupied with establishing artificial and arbitrary, though useful, differentiae that we seem to lose the power of recognizing alliances between the varied morbid manifestations presented to our gaze.

A CASE OF CEREBRAL ABSCESS FOLLOWING THE OPERATION OF TREPHINING FOR COMPOUND DEPRESSED FRACTURE OF THE SKULL; DRAINAGE OF ABSCESS; RECOVERY.

BY GEORGE HEATON, M.A. M.B. OXON., F.R.C.S.,

ASSISTANT SURGEON TO THE GENERAL HOSPITAL, AND VISITING SURGEON TO THE CHILDREN'S HOSPITAL, BIRMINGHAM.

H. C., a boy, aged twelve, was admitted into the General Hospital on September 16th last, with a history of having been hit with a "buckle belt" on the forehead.

The boy was conscious, but dazed; a small contused wound in the left temple led down to a depressed fracture in the frontal bone. The depression was about as large as a shilling, and the fragments were deeply driven in. The wound was enlarged by a conical incision, and a small trephine was applied above the depressed bone. The portions of bone which were depressed were then elevated and removed. The dura mater was bruised and blackened where pressed upon, but intact. The wound was thoroughly irrigated with weak perchloride, and the pieces of bone broken up into small fragments and replaced. The periosteum was then stretched over all, and the wound closed.

The patient progressed favorably for four days, except that his temperature rose in the evening of the second day to 101.4° . On the fourth day he suddenly became unconscious and had two convulsions. The fits started on the right side of the face, and then spread to the right arm and right leg, and lastly to the left arm. The dressings were removed and the flaps opened; some pus was evacuated. The coma passed off in five hours. During the next ten days he improved rapidly and the wound seemed to be granulating up healthily.

On October 1st, ten days after the fits, he became gradually drowsy, and almost continuously; and his pulse, which had ranged from 90-95, fell to 62-65, and became remarkably irregular.

On the evening of that day the wound was thoroughly reopened, and all the replaced bone, which was now intimately adherent, removed. The dura mater still remained intact, but was covered with sloughy granulations, and pulseless. An opening was made in it, and the frontal lobe of the brain explored with a scalpel, giving vent to six drachms of pus. The abscess cavity was washed out and drained.

During the next fortnight the patient seemed perfectly well, but the cavity in the brain refused to close.

On October 20th he began to vomit, to be restless, delirious at night, and to refuse all food.

Early on the morning of the 22d he was seized with very severe pain in the head, and became violently delirious. With the ophthalmoscope some early optic neuritis of the left disk was visible. He was anæsthetized for the third time; some bone was removed. The dura mater was freely slit up and the brain explored in several directions. Only a little cheesy-looking, granular débris escaped.

On regaining consciousness all his bad symptoms had disappeared.

He rapidly convalesced and was discharged well on November 25th. He was then a bright, intelligent boy, and the only evidence of any brain mischief was a slight paresis of the muscles of the right side of the face.

The clinical history of the above patient presents one or two points of sufficient interest to make it worth recording.

The cerebral abscess which formed in the left frontal lobe was doubtless a direct consequence of the complete closure of a septic wound. Fortunately for the patient, instead of a general septic meningitis being set up, a localized septic phlebitis followed, which, spreading inward to the vessels of the cerebral cortex, gave rise to a localized cerebral abscess. The formation of this abscess commenced presumably with the convulsions and coma on the fourth day after the operation, but it was not until ten days more had elapsed that the drowsiness, vomiting, and coma (pointing to compression by pus) commenced.

The abscess must have been in process of formation during this period, without causing any symptoms, for the boy appeared to be in perfect health. The exact nature of the disturbance three weeks later is not evident. The boy appeared to be rapidly dying of diffuse meningitis, yet an exploration, in which nothing definite was discovered, caused the immediate disappearance of all the grave symptoms.

THE CURE OF COMPLETE PROLAPSE OF THE RECTUM BY POSTERIOR PROCTECTOMY.¹

BY JOHN B. ROBERTS, M.D.,
PHILADELPHIA, PA.

THE means ordinarily advocated for the treatment of complete prolapse of the rectum seem to me either inefficient or too radical and dangerous. Searing the mucous membrane of the extruded intestine with nitric acid belongs to the first category; amputation of the prolapsed bowel to the second. It is possible that cauterization may be of service

¹ Read before the Philadelphia Academy of Surgery, November 7, 1892.

in mild cases of the affection; but it cannot be of much value when three or four inches of the everted bowel protrude through a widely dilated anus. The operation which I have designated posterior proctectomy is very efficient in such cases, and is, at the same time, more logical and probably very much less dangerous than amputation of the rectum.

In the *Annals of Surgery* for April, 1890, I described what I believed to be a new method of operating for rectal prolapse, and reported a case so treated. Further observation of the patient has convinced me that my confidence in the value of the procedure was well founded. This opinion has been substantiated by the reports of two cases in the hands of other surgeons who operated by my method. A short account of these three cases will perhaps show that evidence is not wanting to warrant my confidence in the utility of the operation.

CASE I. Dr. Roberts's case. Prolapse of the rectum of fourteen years' duration cured by posterior proctectomy.—A woman, aged thirty-four years, a weaver, had from the age of twenty suffered with prolapse of the rectum. The protrusion had originally occurred suddenly while she was at work and during menstruation. Her recollection is that the extruded portion was about three inches long; that she had looseness of the bowels, and was confined to bed about a week. Since that time the condition had continued. She always replaced the bowel after defecation, and had control of the contents of the rectum except when diarrhoea existed. About three years before she came under my observation she had been treated for what was considered to be membranous enteritis associated with the prolapsed rectum.

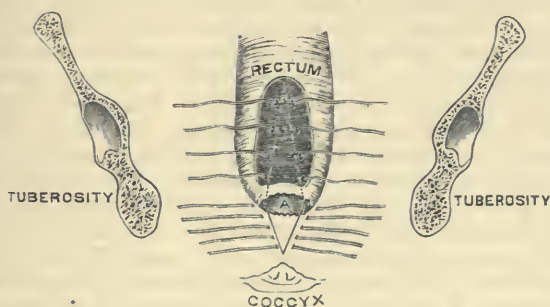
During the many years that this woman had endured the annoyances of her disease she had been treated by various local and internal remedies. The prolapse had, however, continued to increase and the anal aperture to become more and more dilated, until, when I saw her, a sausage-shaped mass about four inches long protruded through an anus into which I could readily insert the ends of my five fingers. The bowel was easily reduced, but soon slipped down between the buttocks, so that it was practically always prolapsed. The woman was dejected, nervous, emaciated and unable to work.

My dissatisfaction with the operations ordinarily recommended and a study of the mechanical problems presented led me to the conclusion that to narrow the calibre of the lower part of the rectum and at the same time diminish the size of the anal opening were the indications. This, I thought, would give the weakened and dilated sphincter muscle an opportunity to prevent the exit of the lower part of the bowel. At the same time there would be less tendency to invagination of the rectal wall, because the lower portion of the gut would be narrower than that part which the downward thrust of the pelvic contents tended to extrude. Cicatricial influences, moreover, would make the coats of the bowel more rigid and less easily inverted and doubled upon themselves.

The operation which I devised to meet these ends was carried out, and proved eminently satisfactory.

The patient was put in the lithotomy position, and the protruded rec-

tum fully reduced. I then made a small incision in the median line of the perineum, near the point of the coccyx; into this I inserted my finger and broke up the cellular connections posterior to the rectum, in a manner similar to that adopted in excision of the lower end of the rectum for carcinoma. A knife was then introduced into the dilated anus at a point half an inch to the right of the median line, and a deep incision carried obliquely backward, so that it divided the anal sphincter and skin from the aperture of the bowel to the original incision made at the end of the coccyx. The knife was then introduced into the anus upon the left side of the median line, and a similar incision carried back to the original wound in the perineum. These oblique incisions included between them a triangular portion of tissue consisting of skin, subcutaneous cellular tissue and an inch of the sphincter muscle. The base of the triangle was at the margin of the anus; its apex was at the extremity of the coccyx. About one inch of the sphincter muscle was thus excised by the two incisions. With scissors, I then cut out of the posterior wall of the rectum a long triangular piece embracing the entire thickness of the wall, which, in the first step of the operation, had been separated from its pelvic connections. The apex of this V-shaped section of the wall of the rectum was situated about three inches up the gut, while its base corresponded with the inch of the sphincter muscle of the anus, which had been included between the incisions previously described.



After hemorrhage had been controlled by catgut ligatures, chromicized catgut sutures were used to bring the divided wall of the rectum together. The first suture was introduced at the apex of the rectal wound; that is, three inches above the anus, and was tied with the knot within the bowel. Successive sutures were similarly inserted and tied at intervals of about one-third of an inch. The last intra-rectal suture was placed just inside the margin of the anus. The sutures were all tied with the knots upon the mucous surface of the bowel. It is possible that it would have been better to have used silk for these sutures, as they would probably have held the parts in apposition longer than catgut, even though it had been chromicized. As an aseptic condition of the wound in this situation is almost unattainable, I am inclined to think that hereafter I shall use silk instead of gut. This portion of the operation greatly reduced the lumen of the rectum, and was intended to make the lower part of the intestine funnel-shaped, with the small end of the funnel toward the anus.

The ends of the divided anal sphincter, which were left by the excision of one inch of that muscle, were then brought together by two cat-gut sutures and one wire suture, which was shotted. The anus was thus reduced in diameter so that it was barely possible for me to introduce the tip of one finger, whereas before the operation the ends of five fingers could readily be thrust into it.

A rubber drainage-tube was then introduced into the space between the rectum and the sacrum, and the wound leading backward from the anus to the coccyx was closed by numerous shotted-wire sutures carried deeply through the structures by means of a strong curved perineum needle. This procedure made the rectum diminish gradually in calibre as it approached the anus, instead of being, as it was previously, a sort of funnel-shaped cavity with its widest end towards the external opening. The new condition was as inhibitory to the occurrence of prolapse as the previous one was favorable to it. Owing to diarrhoea, which occurred a day or two after the operation, fecal matter obtained access to the space behind the rectal wall; and, as a result, suppuration, sloughing, and bleeding occurred. This interfered with the rapid healing of the divided structures, and destroyed what union had already taken place. On the fifth day I took out the wire stitches which had been inserted from the anus to the coccyx. It is possible that the diarrhoea which occurred was the result of the antiseptic washes, which, if I remember rightly, I employed through the drainage-tube. When I perform this operation again I shall endeavor to keep the rectum aseptic by packing it with gauze after the operation, and at the same time have the bowels confined by the use of opiates, so as to allow union by first intention to take place. The suppuration, sloughing, and secondary hemorrhage, which took place because fecal matter obtained access to the wound by the giving way of the rectal stitches, greatly retarded convalescence. It is possible, however, that the cicatricial contraction due to this inflammation added to the permanency of the cure effected.

For a long time after the operation, and even after the patient was discharged from constant supervision, there remained an opening posterior to the anus leading into a small cavity back of, and communicating with, the rectum. This eventually entirely closed. The patient rapidly gained flesh after the operation, became strong and vigorous, and was able to go up and down stairs without any tendency to prolapse. She had control of the contents of her bowels, and was cured of the disgusting condition which had existed for so many years.

An examination made by me in September, 1891, nearly two years after operation, revealed no evidence of prolapse, as far as could be determined by digital examination. The sinus had remained closed, the anus was small, and the mucous membrane was not protruding. The patient stated that sometimes there was a slight tendency for the lower portion of the bowel to appear at the anus, and that it was necessary for her to use enemas in order to empty the bowel completely and to get rid of the sensation of material in the lower end of the intestine. Inquiry repeatedly made did not convince me that this was anything more than a slight protrusion of the mucous membrane. There certainly was not enough anatomical change to give her much annoyance or prevent her attending to the ordinary duties of life. She was seen by me for other conditions a number of times, and I concluded that her anxiety about the state of the rectum was the result of her fear of a return of the trouble

—a mental attitude not surprising, considering her years of rectal disease.

I last saw her in April, 1892, when she was still well, though two and a quarter years had elapsed since the date of operation. The operation, therefore, was a satisfactory one, both to the patient and to me, and the cure effected has been permanent.

CASE II. *Dr. Bell's case. Posterior proctectomy for prolapse of the rectum existing for five years and associated with injury to the back; cure.*

—The case of Dr. James Bell, surgeon to the Montreal General Hospital, which he reported in the *Annals of Surgery*, 1891, vol. xiii. p. 333, is as follows: A woman, aged twenty-two years, suffered from rectal prolapse to such an extent that simply standing in the erect position or walking a few steps caused a protrusion of the walls of the bowel of from four to six inches in length. According to her history, she, at the age of ten years, fell from a height of ten feet, receiving the force of the blow upon her back. This accident was followed by incontinence of urine, and after two years by diarrhœa, which persisted, more or less, for five or six years. About five years before she came under Dr. Bell's observation the bowel began to prolapse, but was readily returned. The tendency to extrusion increased until the condition was as stated above. The incontinence of urine had persisted. She had only imperfect control of the sphincter muscle; when diarrhœa existed she had no control whatever over the contents of the rectum. There was loss of sensation over the buttocks and on the posterior surface of the thighs and calves, though there was no paralysis of the muscles of the lower extremities. No history of paraplegia could be obtained as having occurred after the injury, which she received when a child, and from which her present condition seemed to date. It is seen that the clinical history of the patient was somewhat obscure, as usually happens in cases of disease of long standing. The anus was so dilated that a man's hand of ordinary size could be easily introduced into the rectum. It was the opinion of Dr. Bell that the prolapse was secondary to a paralysis of the sphincter muscle, which resulted from the injury received twelve years previously to the time of operation.

On May 22, 1890, he removed, by my method, from an inch and a half to two inches of the sphincter muscle and a V-shaped portion of the posterior wall of the rectum, the base of which corresponded to the section of the sphincter muscle. The apex of the triangular piece cut from the rectum was situated four inches up the bowel. Silk sutures were used to bring the edges of the rectal wall together and to unite the separated ends of the sphincter. The sutures used for the sphincter were stronger than those employed for uniting the rectal wall. A drainage-tube was then introduced at the coccyx, and carried up behind the line of sutures in the rectum. For eight days there was considerable inflammatory reaction. The temperature varied from 99° to 101° F., and on one occasion it reached 102° F. After the eighth day the temperature remained normal, and the patient was free from pain. The sutures were then removed from the sphincter and the drainage-tube withdrawn. A small sinus was discovered leading from the lumen of the bowel, just within the sphincter muscle, to the opening left by the drainage-tube. Through this some fecal matter passed during defecation. The patient had an uneventful convalescence; was allowed to sit up after six weeks, and was discharged in a little less than twelve weeks,

in better health than she had been for years. She had much more control of the sphincter muscle than before. No fecal matter escaped by the small sinus still existing at the point of the coccyx, through which a fine probe could be passed into the rectum, and there was no tendency to prolapse of the wall of the intestine.

The patient reported to the operator on October 28, 1890, who makes this note of the examination: "The wound was then completely healed, the control of the sphincter was good—much better than before the operation—and the general health excellent. She stated that for two months she had been actively engaged in doing housework, going up and down stairs, etc., and that no sign of prolapse had ever been observed." Dr. Bell, in his article, says further, that the operation recommended by Dr. Roberts is sound in principle as well as safe and simple in practice, and seems to leave little to be desired. He thinks that ventral fixation of the sigmoid flexure, as carried out by Dr. McLeod, of Calcutta, is theoretically objectionable.

I have obtained a later account of this patient from the operator, who under date of October 13, 1892, says: "The after history of my case of prolapse of the rectum, on which I operated by the method described by you, has been perfectly satisfactory. The patient, who lives about sixty miles from Montreal, presented herself for examination, at my request, in November, 1891. There had been no return of the prolapse, and she had almost perfect control of the sphincter—better than she had had for years before the operation. Her general health was greatly improved, and she expressed herself as delighted with the result. I have not heard from her since. I am still of the opinion that this operation is the best and most rational that has yet been proposed for complete prolapse of the rectum."

CASE III. *Dr. Kammerer's case. Posterior proctectomy in a man, followed by permanent cure.*—At a meeting of the New York Surgical Society, October 28, 1891, Dr. F. Kammerer exhibited a man, aged forty-five years, upon whom he had operated by this method. The patient, who had suffered with the condition from boyhood, had, at the time of the operation, a prolapse of the walls of the rectum measuring about three and one-half inches. When the bowel was replaced three fingers could readily be introduced into the rectum through the relaxed sphincter muscle of the anus.

About one and one-half inches of the sphincter were removed, with a portion of the rectal wall extending upward about four inches. The walls of the rectum were united by a continuous catgut suture, which was also the method used for bringing the other parts of the wound together. The part of the cavity lying underneath the coccyx was packed with iodoform gauze, because it could not be entirely closed with sutures. The sutures through the sphincter muscle were reinforced by several deep sutures of silkworm-gut. After the parts united, a rectal fistule was left at the end of the wound near the coccyx. This closed, however, at the end of three months.

The operation, which had been performed about six months before the exhibition of the patient, was, according to the statement of the operator, a complete success. There was "no recurrence of the prolapse, cessation of catarrh and ulceration of the rectum, and perfect control over feces and flatus."

I received a letter from Dr. Kammerer last month (October, 1892),

in which he says, in reference to this case: "I can only add that the patient has had no recurrence whatever of his former trouble, and has complete control over his sphincter."

The history of these cases has been presented, because I believe that there must be merit in an operation which has proved so successful in curing every case in which, as far as my knowledge goes, it has been employed. The method has now the indorsement of two surgeons, who previously were unacquainted with me, and who in each instance were as successful as I in obtaining a permanent cure. The evidence of the utility of the operation is greatly reinforced by this testimony and by the long time after operation at which all the patients were subjected to re-examination.

LAPAROTOMY AND REMOVAL OF CYSTIC TUMOR (CYSTO-ADENOMA) OF PERITONEUM; FORMATION OF ARTIFICIAL ANUS; SUBSEQUENT LAPAROTOMY AND RESECTION OF COLON; CLOSURE OF ARTIFICIAL ANUS; RECOVERY.

By W. PAGE MCINTOSH, M.D.,

P. A. SURGEON, MARINE-HOSPITAL SERVICE, ETC.

On February 8, 1890, I was consulted by Mr. B. for pain in the region of the stomach. Upon examination I found a circumscribed swelling about midway between the lower curvature of the stomach and the umbilicus slightly to the left of the median raphé. The patient was not aware of the existence of this tumor, and, of course, was surprised and chagrined. He stated that he had been in poor health for some weeks, and had been wearing a plaster over this region, which, in his opinion, was sufficient to account for his not having observed the tumor. Inspection led me first to suspect aneurism of the abdominal aorta, the resemblance being so marked as to require careful physical exploration before the probability of this affection could be eliminated. The tumor, for such it was, undoubtedly contained fluid and pulsated feebly from transmission of force from the aorta lying underneath it; absence of lateral dilatation and bruit set aneurism aside.

The tumor was freely movable, dull on percussion; tapping with finger gave succussion, only slightly painful, the character of pain being dull and heavy, but constant. Digestion not materially interfered with.

Condition of patient being cachectic, with no specific history, he was advised that a course of tonic treatment was the first indication to be met, and that an operation for exploration and removal held out the only hope of cure.

The diagnosis made at this time was either a hydatid cyst of the liver or sarcoma of the omentum. At a subsequent visit an aspirating needle was introduced and some fluid drawn out; this resembled dirty serum, being of a sickly straw-color, slightly viscid and highly albuminous. The microscope showed no *echinococcus hominis*.

As is but natural, I suppose in his anxious condition he consulted, off and on, nearly every surgeon of any prominence in the city; the invariable opinion showed that doctors do sometimes agree. The consensus was: Certain death if operation for removal was undertaken; equally certain death, but in the future, if left alone. He was advised by one gentleman of prominence that if he were a woman the tumor could be removed with but little danger to life, but being a man, it was a pre-supposed foregone conclusion that such a procedure would be fatal, as it was rather late in life for the poor fellow to change his sex. (From newspaper reports, such a thing has recently occurred in an adjoining village: the man (?), raised and known to be such by *both parents*, as well as by friends, has taken unto *herself* a *husband*, and declares that a metamorphosis has taken place, and boldly asserts that *she* can and will fill the place of wife. The man she married says she is a female; both parents say she is or *was* a male.)

The first measurements taken of the tumor, on February 8th, showed it to be from the umbilicus to a fixed point on the rib during complete expiration: Left side, $4\frac{1}{2}$ to 5 inches; right side, $3\frac{1}{2}$ to 4 inches.

March 10. One month and two days later, the measurements on the left side were 6 inches; right side, the same—showing a difference of from 1 to $1\frac{1}{2}$ inches on the left side and from 2 to $2\frac{1}{2}$ inches on the right side. The measurements from antero-superior spine of the ilium to the umbilicus showed about the same increase.

In the meantime, the opinion of several very able surgeons, whom I had advised the patient to see, had been, without a single exception, that an operation for removal of the tumor was the only rational course to pursue, though the prognosis was gloomy.

Notwithstanding that the tumor continued to grow, the patient's general health had improved wonderfully. He was in good condition to stand an operation.

On the afternoon of April 22, 1890, in the presence of and assisted by Drs. Perry and Kalloch, of the Marine-Hospital Service, and Drs. Kelley and Smiley, of San Francisco, the operation was performed.

The patient having been anæsthetized, the abdomen shaved and washed in a 1:1000 bichloride solution, a rubber sheet fixed so as to protect the wound, the ordinary incision for a laparotomy in the median line, beginning about two inches below the stomach and extending about six inches in length, passing to the left of the umbilicus, was made.

The tumor (evidently cystic) immediately bulged up, but was retained in place, a trocar and canula being introduced, and a part of the tumor contents, about 3000 c.c. of a dirty, ropy fluid, allowed to escape. Macroscopically, this tumor presented the characteristic appearance of papilliferous cysto-adenoma, the adenoma containing fluid and being divided into a number of smaller papillary protuberances, giving it a nodular appearance. No metastases had taken place in the surrounding tissues, "which must have been the case had the stomach or intestines been the seat of infection" (Ziegler).

The attachments of the tumor to the surrounding tissues were so many and so firm that great difficulty was experienced in removing them; at one point in the descending colon the intestine was so thinned from pressure that one of the assistants, in drawing the intestine aside, tore the colon half across, giving rise to an undesirable complication. Both ends were secured to prevent escape of the fecal matter, and attempts to

detach the tumor continued. At another point, posteriorly, the attachments were so firm and extensive that a majority of those present advised the stitching up of the rents in the tumor, uniting the intestine, and closing the wound. The patient was somewhat weak and did not bear the anæsthetic well.

To quit the operation at this time appeared to me both cowardly and indiscreet, and a proceeding likely to bring odium upon the profession,¹ as it would be leaving the patient to almost certain death; even in case the wounds did not kill him, the original lesion would.

I therefore determined to make every effort possible to break adhesions. Passing my right hand down behind the growth I found that I could grasp the kidneys; assuring myself of the freedom of these organs, and continuing to explore, I found firm adhesions up and down. Steadying tumor with the left hand, having the right well down and behind, grasping the adhesions I gave one or two strong, quick pulls, a procedure I regretted a second later, for although breaking and tearing loose adhesions and detaching the tumor, I also found a stream of blood the diameter of a man's thumb—at least a gush of blood of such size and force as to place our patient's life in extreme jeopardy and lead to the conclusion that a large and important vessel had been ruptured. For the space of a second I more than regretted that I had not sewed him up when advised to do so. Requesting one of the gentlemen to pass the thermo-cautery, I seized a large sponge lying in a basin of hot water and applied it to the bleeding-point, combining heat and pressure, and in another second the flow of blood had stopped as mysteriously as it had started. Thermo-cautery not used, and would probably have been useless anyway. I could find no vessel to ligate, so left alone with hot sponge. No further trouble was met with, the only thing left now being the pedicle; this was the size of the little finger and *hollow*, arising apparently from the greater omentum; as stated, it was a hollow cylinder, and perhaps three or four inches in length; ligating it in two places, dividing between the two with scissors, the tumor was taken out; the growth itself was about the size of a man's head, and lobulated or papilliform, being subdivided into a number of smaller cysts, each communicating with the main growth.

Several gallons of hot water were poured into the abdominal cavity, and, with the hand, the intestines thoroughly washed; this was repeated several times, the last time only rinsing without putting in the hand. The torn colon was now stitched to wall of abdomen, leaving posterior wall of intestine intact. The patient was in such a critical condition that it was deemed best not to prolong the anæsthesia longer at this time, hence a resection of intestine was not undertaken.

The abdominal wound was closed, the patient given a hypodermatic of brandy and placed in bed, having been under the anæsthetic two and one-quarter hours. He did not fully recover consciousness until 12 at night, being nine hours from beginning of operation.

23d. Saw him again at 9 A.M. Slept quietly latter part of night. Pulse, 96; temperature, 99°; respiration, 18. Some thirst. Very little pain. Ordered whiskey, 3ij, which he vomited. Ordered hypodermatic injection of $\frac{1}{4}$ gr. morph. sulph. Passed catheter; drew 3iv urine. Com-

¹ The case having attracted widespread attention.

plains of wind on stomach, and is nauseated. Ordered opii pulv., gr. j; quininae sulph., gr. v, in capsule every four hours.

6 P.M. Temperature, 98°; pulse, 90; respiration, 22. Vomiting. Ordered Seltzer water and cracked ice. Vomited, off and on, all night. R. Acid. carbol. et bismuth. subnit. in mint-water.

Still complains of wind on stomach. Urinated voluntarily; passed gas by rectum, first time since operation.

24th. 9 A.M. Temperature, 98°; pulse, 76. Passed urine naturally. Spent a fairly comfortable night. Allowed barley-water and milk diet. No vomiting since 4.45 P.M. yesterday. Passed gas per rectum. Was given half an egg and some chicken broth during the afternoon—retained.

6.45 P.M. Complains of severe pain. Gave hypodermatic of Magendie's solution. (R. Morph. sulph. et atropin. sulph.) Wound dressed; looks well.

25th. 9 A.M. Comfortable night; no pain; slept well. Temperature, 99°; pulse, 72; respiration, 12. Fairly good day. Some pain and heaviness in wound; slight headache; medicines and diet unchanged. Patient has been confined to back and not allowed to turn in bed.

27th. 9 A.M. Slept well; vomited; some pain; hypodermatic of Magendie's solution, gtt. viij. Used catheter: four ounces of urine. From this time on catheter had to be used several times daily.

Wound dressed; some fecal matter, also bloody discharge. Nausea and vomiting; straining very hard; abdomen distended with gas. Ordered: R. Quin. sulph. gr. viij, ac. sulph. arom. gtt. viij, mucil. acaciæ ʒij. S. Inject per rectum. Quinine, acting as a tonic to the partially paralyzed bowel, caused discharge of considerable gas.

30th. 9 A.M. Temperature, 98.6°; respiration, 15; pulse, 96, small and hard. Wound dressed and considerable fecal matter removed. Several times during the night wound had to be dressed. Three operations from bowels (artificial anus); nothing passed through rectum except gas occasionally. Injection, tr. opii and starch. Only liquid food allowed during first weeks after operation.

May 2. 9 A.M. Heavy sharp pain in wound; cold perspiration on face and feet.

4th. 9 A.M. Suffers some from insomnia; dressings showed small quantity of pus; temperature and pulse normal.

6th. 9 P.M. Had slight chill to-day. Temperature, 102°; pulse, 82; respiration 16. No change in treatment. This was his only chill and highest temperature during his time in bed.

9th. Appetite poor; given egg and sherry; bowels moved several times daily.

11th. Temperature, 101.2°; pulse, 82; respiration, 20. Still suffers from diarrhoea; all passages from artificial anus; only a little flatus has passed through rectum since operation. Used an injection of nitrate of silver, gr. ij to ʒv water through artificial anus; no benefit. Wound necessarily dressed after each operation from bowels.

13th. 9 A.M. Temperature, 101.6; pulse, 84; respiration, 16. Enemata of starch and laudanum.

17th. Complains of severe pain in region of rectum reaching up to wound. Passed catheter, and pain relieved. During night suffered considerable, slept but little. Digital examination through rectum revealed no indications of abscess; same dull pain in lower bowel;

retention of urine; suppository—*opii et belladonnæ et iodoformi*; was allowed beefsteak.

23d. 9 A.M. Slept well; no pain; bowels regular. Sat up in rocking-chair for forty-five minutes; first time out of bed. Has been living on liquid food with an occasional steak; to-day ate an Irish potato, which was the cause, I presume, of a very restless night, with pain in the bowel and wound. Has been taking a tonic for some time. R. *Tr. ferri chlor., tr. nucis vomicæ, ac. phos. dil.*

27th. 9 A.M. Temperature, 98.6°; pulse, 84; respiration, 16. Still has diarrhœa and some pain; some bleeding from wound to-day, with pain. Hot applications to wound with an occasional injection of Magendie's solution for past few weeks.

31st. Much the same; had desire for food to day for first time.

June 3. Suffers some pain whenever bowels move; stitches removed to-day.

5th. Some soreness in wound, but able to sit up to-day for five hours.

10th. Has three to four operations from bowels each day; hot applications and laudanum enemata still used; also necessary to use catheter occasionally.

13th. Sitting up about half the time. Diet consists of steaks, bread, coffee; sleeps well; suffers some pain yet; bowels still loose. Find a diarrhœa from an artificial anus difficult to control, and on several occasions during the treatment I have had a stream of hot water injected into the rectum and out through the wound, both for remedial effect and to keep bowel patent.

Has been anxious for some time to have artificial anus closed.

On June 17th, assisted by Dr. Charles Blake, of this city, and nurse Miss Barlow, the patient was anæsthetized, and at 4 P.M. I did a second abdominal section on this man. The two ends of intestine were dissected loose from walls of abdomen, and as the mucous membrane was hypertrophied and everted, about an inch was resected from each end, bleeding vessels tied, a catgut mat fitted into either end, the ends approximated and stitched together by means of Lembert sutures, using silk for sutures; abdominal cavity cleansed by flushing with several gallons of hot water, thus cleaning and floating intestines into position at the same time; the abdominal wound closed, dressed with adhesive strips, borated cotton and bandage applied tightly, and patient placed in bed.

The operation occupied two hours' time; patient stood anæsthesia better than on former occasion, remaining unconscious only three hours.

At 9 P.M. was called again in haste, and found, upon my arrival, that patient had been bleeding considerably, the dressings being wet with blood. Proceeding at once to anæsthetize him, I again called in Dr. Blake and we opened the abdominal cavity and secured the bleeding-point, which proved to be a part of the omentum ligated at first, but from which the ligature had somehow slipped.

Wound again closed. Time under anæsthesia, two hours; frequent injections of whiskey were necessary. All ligatures and sutures used in this case were of silk. At 12.30, patient sleeping quietly; condition good.

June 19. 6 P.M. Temperature, 98.6°; pulse, 78; respiration, 16; much pain in right side; applied sinapism; has been vomiting, off and on, all day.

20th. Temperature, 98.6°; pulse, 102; respiration, 10. Still vomiting; the straining and retching cause great tension on sutures; is somewhat nervous, starting suddenly in sleep; twitching of muscles; micturates without trouble.

23d and 24th. Severe sharp pains in abdomen. Magendie's sol. gtt. vij. Wound dressed, found full of pus.

25th-27th. Temperature, 98°; pulse, 72; respiration, 12. Complains of a feeling of constriction in chest; sharp shooting-pains in wound. Wound dressed and found to be quite inflamed; injections of morphine and atropine kept up. Sleeping fairly well; wound looks better. Ordered enemata which returned unchanged; later in the day passed gas per rectum.

30th. Sharp pain through bowels relieved by injection, per rectum, of quin. sulph. in ac. sulph. arom. causing discharge of flatus; wound looks well; some vomiting; great pain; enemata brought some flakes of fecal matter; passes flatus through rubber tube.

July 2. Wound dressed; adhesive strips removed; packed wound with iodoform gauze.

3d. Enemata; bowels moved; passed one of the catgut mats, almost as good as when used; although sixteen days since used no evidences of beginning absorption at all.

4th. Wound dressed; stitches removed; vomited considerably; pain bad; hot cloths locally relieve. Suffers greatly from accumulation of wind or gas in intestine, this is readily relieved by enemata of quin. sulph. in ac. sulph. arom., and passing a rubber tube into the rectum to allow escape of gas.

7th. Pulse 90 per minute and weak. Ordered tr. digitalis. Fluid diet kept up. Passed second catgut mat perfectly good, unchanged. Has diarrhoea.

9th-20th. Temperature, 98.6°; pulse, 72; respiration, 10; takes one grain morph. sulph. in twenty-four hours. Bowels moved; had a formed passage. Sat up for an hour on 13th. Beef-tea per rectum. Some diarrhoea. Sat up two hours on 15th; feels better.

21st. Sat up most of time.

23d. Discharged cured.

The microscopic examination did not amount to much, as it threw but little light upon the pathology of the growth. From a number of sections made by myself, in one only did I find any indication of adenoma, the others showing normal peritoneal tissue. In form, the tumor very much resembled multilocular cyst or cysto-adenoma, being made up of a multitude of small and large cysts; its contents, "a ropy, turbid, variously colored fluid," very much resembled cysto-adenoma. The rapidity of its growth is somewhat against the idea of benignity, while the fact that no metastases had taken place is against malignancy. In about a year and a half there has been no indication of a return of the growth.

REVIEWS.

BEITRÄGE ZUR STRUKTUR UND ENTWICKELUNG DES CARCINOMS. Von E. NOEGGERATH, M.D., Prof. Emer. des New York Med. College. Mit 108 Abbildungen auf Drei Tafeln in Farbendruck. Pp. iv., 39. Wiesbaden: J. F. Bergmann, 1892.

CONTRIBUTIONS TO THE STRUCTURE AND DEVELOPMENT OF CARCINOMA.

THIS monograph is one of those beautiful pieces of work for which German investigators are so justly celebrated. The author's half-apologetic tone in beginning his preface is commendable to his modesty; but an inspection of the pages of his monograph must arouse an enthusiasm which makes such an introduction unnecessary. He says a work of this character is required to properly illustrate the subject, which would be impossible in an ordinary journal or a work of smaller dimensions. This is true, as will be agreed upon by every investigator who has endeavored to publish studies of this character in the usual serial journals. A sympathetic chord is struck in everyone who has studied the preparations obtained by precise aniline staining, when he reads, in the preface of Noeggerath's work, his plea for colored plates to reproduce such objects. So much depends upon the correct representation of the tints and shades of color in these staining reactions, that all the resources of the lithographer's art are called into play in the endeavor to put on paper the images of these beautiful microscopical objects. It is in this particular that the Germans excel; and here lies the difficulty which must confront the American observer when endeavoring to carry out such work. Certainly, black and white pictures, or photographs, can never adequately fulfil the requirements of such a case.

Another departure made by Noeggerath consists in having his drawings made from the preparations by a non-medical draughtsman, who, of course, was not biased by his preconceived notions. Such a method is evidently advantageous, providing the artist be sufficiently educated to correctly interpret and represent the minute details of these objects; but it will be exceptional for the author of a research of this character to find anyone to do justice to this important part of his work.

The question which forms the subject-matter of this splendid monograph is one of most absorbing interest at the present time. The problem of the etiology and development of carcinoma is being attacked with great vigor by many observers in all parts of the civilized world, and scarcely a week passes which does not witness some contribution to the subject. In the main, we may say that the theories relating to the origin of carcinoma are the parasitic and non-parasitic; and each theory numbers among its adherents some of the leading investigators of the time.

Peculiar bodies are found in the cells of carcinoma which are usually called "cell inclusions," and these bodies which were noted by Virchow and others, nearly fifty years ago, have been regarded as parasitic protozoa (coccidia) on the one hand, and as products of cell metamorphosis or cell degeneration on the other. Noeggerath first considers these cell inclusions and quotes the work of Van Heukelom, Kiener, Malassez, Wickham, Virchow, Welsh, and Ribbert. Wickham's studies on cutaneous psorospermosis are noted in detail. Noeggerath calls particular attention to the fact that Virchow, in 1851, described and illustrated the identical objects of Wickham, and considered them the result of an endogenous cell formation. In this time-honored investigation Virchow not only gave a description of the homogeneous intra-cellular bodies, but he also noted the large and small vacuoles, and considered them as developing in enlarged and altered nuclei. Upon this work of Virchow Noeggerath dwells with much emphasis, and he insists that, "had not this classical description which Virchow published forty years ago fallen into oblivion, the indisputable conclusions obtained through his description would alone have been sufficient to guide the adherents of the parasitic theory, after a short study, into the correct path." It is pleasant to note that the conclusions of Welsh, of Johns Hopkins University, find a place in this connection.

The studies of Ribbert are considered at some length, and in them Noeggerath finds much to coincide with his own observations and conclusions. All his work stands arrayed against the parasitic theory, and interprets the formations found in carcinoma cells as the results of nuclear changes.

In the second section of his work, Noeggerath enters upon his personal studies of the cell inclusions in a variety of carcinomatous tissue tumors. These inclusions are studied from their micro-chemical staining reactions, and the methods, as well as the results obtained by Noeggerath, are remarkably precise. In the first place, he employs a double stain of alum carmine and picric acid, and by this method obtains objects which correspond to the cell inclusions of the other observers. By this staining method the nucleus takes on the carmine stain, while, in the earlier stages of development, the inclusion remains unstained, or only lightly stained. In following the development of these included bodies, the author considers the *encapsulation of one cell by another as the preliminary step*; the enveloping cell applying itself as a protoplasmic layer about the enclosed cell, and showing its nucleus somewhere in the periphery. A vesicle unstained with carmine appears beside the nucleus of the enclosed cell, and this unstained body increases in size in the succeeding stages of development, in this way encroaching more and more upon the nucleus. On careful examination by high powers, it is possible to find the chromatin of the nucleus of the enclosed cell escaping in the form of fine granules into the cell protoplasm. Not only does this dispersion of chromatin occur in the original cell containing the inclusion, but it also extends to the nuclei of neighboring cells. To this dispersion of nuclear chromatin Noeggerath calls especial attention; and he terms the phenomenon "*karyoclasia*." Eventually, the inclusion grows to such a size as to occupy the place of the original encapsulated cell, having appropriated, in turn, the nuclear and cell contents. At this stage the nucleus of the encapsulating cell still remains partly intact. This is the object which Wickham, and other French

students, regarded as fully developed coccidia lying in an enclosing cell. They made the error of not recognizing the outlying cell as the one which encapsulated the cell containing the inclusion. Noeggerath says this false conception of the relations of these objects goes through the whole literature—"not only the French."

On comparing his cell inclusions with the so-called "karyophagus" of other investigators, Noeggerath admits that the objects found in carcinoma tissue stained with picro-carminé might easily be taken as parasites; but, on applying the aniline staining agents, an entirely different appearance is produced. It is in the precision of these refined methods that the beauty and value of this work lies. Staining with gentian violet after Gram's method, or with safranin, fuchsin, or Noeggerath's five-color mixture, the vesicle which is but slightly stained by carminé takes on the *same stain as the nucleus of the cell*. In fact, these aniline stains demonstrate that the inclusion and nucleus are homogeneous; while in picro-carminé staining the inclusion appears as something heterogeneous. With the anilines the author could observe the stages in the transformation of the nucleus—enlarging, dispersion of fine chromatin fragments, and their transfusion into the cytoplasm. Hence he concludes that the described "karyophagus," or inclosed protozoön, is a deception produced by the method of staining, and if these intracellular formations are not protozoa, then the inclusions of Darier and Wickham must be stricken from this class.

Following the "karyoklasis" and dispersion of finely pulverized nuclear chromatin, Noeggerath noticed that the whole nuclear and cell contents disappeared; and eventually, only an empty cell capsule remained; and he ascribes this result in part as due to the mobility of the chromatin fragments, which wander from the nucleus and cell. Aside from this, he has often observed solid masses of chromatin with "tube-like" pseudopodia or processes, into which the minutely-divided chromatin flowed. Careful examination revealed the fact that the carcinoma cells were connected by this tube system with each other, and with the interstitial lymph spaces and lymph vessels. Such a circumstance would permit the diseased cells to discharge their juices into the circulating juices of the body. A fine nuclear dust could easily find its way into the blood by means of this tube system; and Noeggerath suggests, that in this way the toxic properties which the experiments of G. Klemperer have demonstrated in the blood of individuals suffering from carcinoma might be induced.

A consideration of the "parasites" of Sjöbring and of Russell now follows; and here the author has taken the rare, though commendable course, of criticising their investigations only after having personally studied the preparations which these men described, and which they kindly furnished him. He is convinced, after painstaking study, that the formations described by Sjöbring and Russell independently are probably identical, and are the result of nuclear metamorphoses. The "budding" and migratory" forms, for instance, he believes to be the budding and migration of nuclei as observed by Ogata, Auerbach, and Nussbaum, in certain histological objects. He further notes that the nuclear contents of these carcinoma cells show the chromophile matter of Auerbach and others, which may be differentiated into two distinct substances by double staining. For instance, by hæmatoxylin and eosin staining, the nuclear substance is found to stain in part

by eosin (eosinophile), and partly by hæmatoxylin (hæmatoxylinophile).

Concerning the presence of leucocytes in carcinoma, the author believes that not only the normal white blood-cells are present, but also germinating endothelial cells, and proliferating connective tissue cells; and he suggests that we will succeed in finding different physiological relations for the varying forms of wandering cells. Already the work of Grawitz has demonstrated the origin of the connective tissue leucocytes in awakened "slumbering cells."

In the third section of his monograph Noeggerath proceeds to further disprove the parasitic theory of carcinoma, and thus arrays himself with Baumgarten, Borel, Klebs, Hauser, Virchow, Welsh, and others. The arguments of Billroth in favor of a specific cancer micro-organism are offset by the opinions of Hauser, and Baumgarten, who argue from the standpoint of the heteroplasmic nature of carcinoma tissue, and from the absence of contact infection in tissue surrounding the growing cancer. The work of Williams and Cramer is here referred to, in which they found an exact reproduction of the original tumor structure in the metastases in various organs. "Nothing of this kind is known in pathological mycology."

Hannau's transplantation experiments are now taken in hand, and Noeggerath says that, while we cannot deny the fact of the growth of these pieces of tumor, this would furnish no ground for an infection theory; for if normal epithelium will grow further after transplantation, it is not remarkable that carcinoma cells will proliferate under like conditions. In transplantation, the tumor develops from the *implanted cells*; in carcinoma arising independently, from the *elements of the affected organ*. The cells, with their acquired power of proliferation, are carried over in transplantation, and only reproduce their kind. Transplantation, in fact, is only a metastasis from one individual to another; and until a germ is isolated and cultivated outside of the body, which will produce carcinoma when planted, we must not regard transplantation experiments as proving the parasitic nature of cancer.

By another careful micro-chemical study of the coccidia in the rabbit's liver, as compared with cancer cell inclusions, Noeggerath further strengthens his convictions of the dissimilarity of these objects. Where coccidia are found in cells (rabbit's liver, etc.), the *nuclei are always found well preserved*, and never is the karyoclastic effect observed, as found in carcinoma cells.

The leucocyte fertilization theory of Klebs, and the asymmetrical mitosis theory of Hanseemann are now considered. Concerning these, our author says that, even admitting them to have an etiological bearing in carcinoma, what produces this asymmetrical mitosis in the one case, or incites the leucocyte and epithelial cell to unite in this illegitimate manner, in the other?

By staining first with alum carmine, and then by Gram's method, Noeggerath was able to demonstrate the very interesting and important fact that certain leucocytes contain, in their substance, particles of the dispersed chromatin of the degenerating nuclei of carcinoma cells. Such leucocytes were most frequently observed in cells with irregular mitoses, and sometimes he found the leucocytes lying in the cells from which the chromatin had escaped. This observation speaks forcibly against

the theory of Klebs and Macallum, who maintain that the carcinoma cells appropriate the chromatin of the leucocytes.

In concluding this contribution, the author again directs attention to the universal presence in nuclei of the two chromophile nuclear substances as noted by Auerbach, Ogata, Luckjanow, Steinhaus, Macallum, and others—the red-staining substance (“erythrophile”), and the blue-staining substance (“cyanophile”). The remarkable work of L. Auerbach on this subject is detailed, for in this work the author finds confirmation of his own researches on carcinoma cells. More than this, Noeggerath ventures to suggest an hypothesis relating to the development of carcinoma on the ground of these researches. The hypothesis which he offers is that the nuclear metamorphoses which his studies have shown to be always present in carcinoma, originate in a changed equilibrium between the normal proportion of erythrophile and cyanophile substances in the nucleus of the cell which becomes malignant. This hypothesis is given merely as a suggestion, as its author admits the inadequateness of our present knowledge to demonstrate its bearings. It serves, however, to direct investigation into this new and promising field, and in doing this the present object of its propounder is fulfilled.

To properly appreciate a work of this character, touching, as it does, on so many aspects of this important subject, it should be carefully read until every point is clear, then it should be laid beside the microscope, and each figure and description verified by means of preparations made by following the writer's methods.

Taken as a whole, this monograph ranks as one of the most important contributions of the present time to our knowledge of carcinoma structure and development. In its light, many of the contributions of the last few months on carcinoma parasites must be regarded with grave skepticism. In fact, Noeggerath's marvellous study of nuclear metamorphoses *must forever remove the cell inclusions of many authorities from the list of parasites.*

A. P. O.

NAPHEY'S MODERN THERAPEUTICS. VOL. I.: GENERAL MEDICINE AND DISEASES OF CHILDREN. By ALLEN J. SMITH, M.D., Assistant Demonstrator of Morbid Anatomy and Pathological Histology, Lecturer on Urinology, University of Pennsylvania; Physician in the Dispensary for Diseases of Children, University Hospital, etc.; and J. AUBREY DAVIS, M.D., Assistant Demonstrator of Obstetrics, University of Pennsylvania; Assistant Physician to Home for Crippled Children, Philadelphia. Ninth edition, revised and enlarged. Pp. xx., 1034. Philadelphia: P. Blakiston, Son & Co., 1892.

IN reviewing a book which has found a place and filled it so well that it has reached its ninth edition, criticism might seem superfluous. Although in comparing this with previous editions we readily find great improvement in the quality of the matter, yet even this edition leaves an opportunity for further work. Medical science is advancing, in that it rests each year upon a more solid foundation, as pathology, physiology, and chemistry give a more accurate basis for the practical side of it—therapeutics. While much that is obsolete has been eliminated, more

that is new has been added, so that the work gives a very satisfactory picture of the treatment as directed by the best clinicians of to-day. We are somewhat surprised to find the terminology of the Pharmacopœia of 1870 retained—*morphia*, *iodinium*, *glycerina*, instead of *morphina*, *iodum*, and *glycerinum*, although the last occasionally appears. We note many typographical errors; a few are *chinopodium*, *bacarum*, *tolutanti*, *aq. comp.*, *chloramid*, and *althæ*, which, in the nominative case as well, has proved a stumbling-block. Dobell's solution is correctly given on p. 69, while on p. 66 practically the same formula is credited to another physician. Of the fifteen hundred and eleven formulæ, containing many valuable suggestions and adding greatly to the usefulness of the work, several are repetitions; for examples, Nos. 108 and 161, 708 and 1469, while 807 and 856 are doubtless intended to be identical. There are but few misstatements of fact, but undoubtedly the distinguished inventor of intubation will be surprised to learn that "the laryngeal tube is further kept within control by the attachments of silken threads." In the mention of creasote we do not find a valuable method of administration, namely, by means of enteric pills.

On p. 213 is given Durand's formula, which is, on page 215, incorrectly stated to consist of equal parts of ether and turpentine. The qualifying adjective "fluidum" is variously placed in relation to "extractum" and the name of the plant; more uniformity is desirable. We believe that an apothecary, if requested to fill a prescription calling for "citro-amoniated iron pyrophosphate," would be very likely to seek information from the prescriber. A few prescriptions written in the metric system have crept in, which should be, but probably are not, intelligible to the average practitioner. In the main the use of capitals and of abbreviations by the authors is commendable. A striking feature of this work is the total absence of errors, which, if present, might result seriously to patients. However, the prohibition of castor oil, or any other oil for that matter, after the administration of male fern, should be insisted upon; on this point recent literature speaks with no uncertain sound. There are a few instances of remedies mentioned for unaccustomed uses, as *cocillana*—which, by the way, appears as "*cocillama*" in the index—being recommended for habitual constipation, and not being cited as a valuable expectorant in bronchitis, catarrhal pneumonia, and phthisis, which it is believed to be, and which has a literature.

There are to be found some contradictory statements; the relation of uric acid to urea is given on p. 409 as 1 to 30, on p. 469 as 1 to 35, while Haig, the author quoted, in his book states it to be 1 to 33. In the sections devoted to Diseases of Children, the articles upon the Clinical Examination of Children are good, in particular that of Professor Ledamenda, while Infant Feeding is discussed in a way that is thoroughly satisfactory. In the Index of Authors are a few misspelled proper names, and we note that Dr. Calvin Ellis is credited to England instead of Massachusetts. Naturally, in a work like this, symptoms must needs be discussed as well as diseases, and this must be borne in mind, but with a realization that asthma represents the former, and bronchitis the latter class, the reader will always find something of value. No practitioner can fail to profit by a careful study of this work: the junior, to find out what the leading physicians of the world have considered to be of value in the treatment of disease; the physician of mature years, to enlarge his working resources and lift himself above the level of routine, and

modernize his treatment. As a work, it occupies a middle ground, between the System, with its diffuseness and personal experience of the limited number of authors, and the Index of Remedies, barren of indication, and misleading to the recent graduate. This is pre-eminently a book for study, and no practitioner can use this work as it should be used without acquiring a broader knowledge and a more efficient armamentarium. Only one who has written or edited a work on therapeutics knows the very great difficulty which is encountered in keeping out the errors to which attention has been called in this review. Yet, while these errors mar, to some extent, the beautifully printed volume before us, they by no means detract from its value as a guide to practice.

R. W. W.

THE MASTOID OPERATION: INCLUDING ITS HISTORY, ANATOMY, AND PATHOLOGY. By SAMUEL ELLSWORTH ALLEN, M.D. 8vo., pp. 111. Cincinnati, Ohio: Robert Clarke & Co., 1892.

THIS little book gives a very good account of the German idea concerning mastoid inflammation and methods of its surgical treatment. As the rather pretentious title indicates, it erroneously assumes that there is great and frequent necessity for operating by perforation, upon the mastoid portion of the temporal bone. The fact is that surgical perforation of the mastoid cortex is one of the rarest operations an aurist will be called upon to perform.

Acute inflammation of the mastoid cells in a previously healthy ear, sufficiently intense to demand perforation of the mastoid cortex, rarely, if ever, occurs. Many aurists of large experience have never seen it. Hence the necessity for "the mastoid operation" can be thrown out of consideration in cases of acute otitis media with mastoid congestion. If simple acute suppuration of the mastoid cells ever occurs in a previously healthy ear, some form of the old-fashioned gimlet operation on the unyielding cortex of the mastoid will give the best results. In fact, in any case some form of boring operation on the mastoid is preferable to the use of hammer and chisel, with its inevitable shock to the cranial contents.

Unfortunately, of late years there has been a growing tendency to consider the pain, congestion, and œdema, often found in connection with acute otitis media, as indicative of intra-mastoid suppuration, and as calling for mastoid trepanation. Possibly, in acute otitis media there is often some suppuration in the mastoid cells; but this finds its way out through the aditus ad antrum into the middle ear and is discharged from the external meatus. One thing is very certain—that the symptoms of late erroneously attributed to intra-mastoid suppuration, and which have induced some surgeons to open the mastoid cavity, where they report that rarely pus is found *at first*, are the same old symptoms that have yielded in many other cases to internal and external antiphlogistic treatment, including in some cases a Wilde's incision through the soft tissues over the mastoid.

When we turn to *chronic purulency* in the middle ear, with caries and

necrosis of the mastoid, we find altogether another set of symptoms and very different surgical indications.

It may now become necessary to open the mastoid cortex and expose the mastoid antrum and cells, in order to remove necrotic tissue and prevent the encroachment of the carious process upon deeper parts of the cranium. So much the aurist may be called upon, now and then, to do, if he can assure himself that the necrosis is limited to the mastoid cavity. If necrosis has invaded deeper parts of the cranium, then opening the mastoid is only the preliminary to a deeper surgical penetration of the cranial cavity for the relief of extra-dural or cerebral abscess, or for the examination of the lateral sinus. If the latter is found in a state of thrombosis, and if this condition has extended to the internal jugular vein, the indications are to ligate the jugular, and turn out the thrombus from it and from the sinus.

Manifestly now the only one qualified to operate on the mastoid is the general surgeon, whose daily experience amply qualifies him to successfully carry out *all* the surgical indications for the relief of the sufferer.

Aurists will confer greater benefits upon mankind by confining their attention to the relief of deafness and the cure of chronic purulent otitis media. By doing the latter they will prevent mastoid necrosis, sinus-thrombosis, and cerebral abscess. Whenever an aurist has diagnosed any of the last-named conditions, he should invoke the aid of the general surgeon, just as the general practitioner summons the general surgeon to relieve empyema of the thorax.

Regarding the form of instrument to be used in opening the mastoid, some kind of boring instrument or drill propelled by the hand or the dental lathe, or some form of rongeur or bone-forceps is preferable to a chisel and a hammer, as the latter combination unavoidably communicates more shock to the brain than a cautious surgeon would be willing to convey to that organ.

The illustrations in this little book are very good, but there are some curious typographical mistakes, such as *mastoides* (pp. 34 and 72) for *mastoideus*, *Monatschrift* (p. 16) for *Monatsschrift*, *Archives für Ohrenheilkunde* (pp. 9, 56, 68, and 69) for *Archiv für Ohrenheilkunde*, and *Trölsch* (p. 68) for *Tröltsch*, which we may hope to see corrected in another edition.

C. H. B.

SYPHILIS AND THE NERVOUS SYSTEM. Being a revised reprint of the Lettsomian Lectures for 1890, delivered before the Medical Society of London. By W. R. GOWERS, M.D., F.R.C.P., F.R.S. 12mo., pp. viii., 131. Philadelphia: P. Blakiston, Son & Co., 1892.

THESE lectures, which are already familiar to the medical public from their appearance in various medical journals, are now made more accessible by publication in their present form. They are rather a guide to the proper methods of study of syphilis as it affects the nervous system than an elaborate review of our present knowledge upon all the details of lesions, symptoms and treatment, and as such a guide they are worthy of the consideration of every physician who wishes to

deal understandingly with the subject. We look in vain for any detailed description of the gumma, the growths in the arterial walls, or meningitis, but instead we find the author pointing out that these are the specific lesions of syphilis peculiar to it. Beside these, he distinguishes other lesions, due to syphilis, but not peculiar to it, except in some cases by their distribution or seat. In many of these lesions, especially those of a congestive or inflammatory type, we cannot yet say definitely whether they are syphilitic lesions or not. Bacteriology may aid us in the future, but as yet it affords no help. We must determine such points by the evidence of such sequence as proves causation, and the evidence of therapeutics. The evidence from therapeutics, although so often employed, is of only limited value, and the lecturer points out the conditions under which it can be of assistance—conditions so stringent that the practitioner who argues glibly that a trouble must be syphilitic because it yielded to anti-syphilitic treatment will find, should he venture to apply them, that the foundations of his beliefs are far less substantial than he thought. Finally come the degenerative processes, where the evidence from sequence is alone of service, and here the lecturer accepts Erb's and Fournier's views, and inclines to Strümpell's hypothesis of a chemical poison. In the lecture on symptomatology, too, we find the subject treated in the same way. Individual symptoms are for the most part ignored, but the lecturer points out the questions which must be met in the individual case: Where is the lesion and what is its nature? May it be syphilitic? Has the patient had syphilis? Can any other cause be traced? Does the result of treatment confirm the conclusion of syphilis? These questions, as well as the questions as to the pathology, he illustrates incidentally from his own experience, occasionally citing statistics, or dwelling upon some special point in detail. Having pointed out the conditions upon which prognosis must be based, the lecturer commits himself to the assertion that syphilis is incurable—that is, that there is no evidence that that which causes the manifestation of the malady ever is or ever has been cured.

To the neurologist, especially, dealing only with the consequences of the disease or with its late manifestations, appearing years after recovery from the symptoms of the first attack, such an assertion may be readily accepted, but it is hardly justified. Our knowledge is yet too inadequate for us to say that a man who has once had syphilis is exempt from any further consequences of the disease, and that no treatment can make him exempt; nor is it any contradiction to this statement to say that he may live his life through before any further consequences manifest themselves. In a very few cases, however, the system seems to be so free from any trace of the disease that a second infection occurs. Such cases, although we cannot predict which they are, must be regarded as proving the possibility of a cure. In the treatment of the disease the lecturer has found no case of intra-cranial disease which indicated that mercury had succeeded where iodide had failed. In the administration of iodide, moreover, he cautions against its use for more than eight or ten weeks. He holds to energetic treatment for short periods, believing that long-continued treatment by small doses is dangerous, since it accustoms the patient to the drug. One method alone is "sure" in the prophylaxis, and that is unbroken chastity—which, unfortunately, is not absolutely sure. "With all the knowledge I possess, and any authority I have

can give," he concludes, "I assert that no man ever yet was in the slightest degree or way the worse for continence or better for incontinence."

P. C. K.

HYGIENE AND PUBLIC HEALTH. PRACTICAL SERIES. By LOUIS C. PARKES, M.D., D.P.H., Lond. Univ.; Fellow of the Sanitary Institute and Member of the Board of Examiners; Lecturer on Public Health at St. George's Hospital Medical School; Medical Officer of Health, and Public Analyst for the Parish of Chelsea. Pp. 523. Philadelphia: P. Blakiston, Son & Co., 1892.

PERUSAL of this work cannot but cause surprise that such a mine of misinformation should bear so recent a date, and it is hardly possible to conceive that a book containing so many statements remarkable only for their inaccuracy should have lived to reach a third edition. One cannot help feeling that it is just as well that many important subjects are either entirely omitted or discussed at no length, and on the other hand it may be considered that no great harm can come of handling comparatively trivial matters with a wealth of detail.

The chapter on Water might well have been written a quarter of a century ago, for the author has not seen fit to avail himself of the great fund of information which has been given to the scientific world by the researches of recent years. Perhaps there is reason for this, for in England that tiresome body, the "Rivers Pollution Commission," is looked upon as the chief, if not the sole, authority on this subject.

Chapter II., which takes up more than a fifth of the entire volume, treats of the collection, removal, and disposal of excretal and other refuse. The author's remark in the preface that "the chapter on Removal of Excreta is, perhaps, somewhat unduly lengthy in proportion to the size of the whole book," can be cordially indorsed, but his reasons for its length are by no means a sufficient excuse. Much of this chapter is not worth the space which detailed criticism would require. The chapter on Air and Ventilation has a value about equal to that of the one on water. The method given for conducting an analysis of air demonstrates that the author is as unfamiliar with the proper methods for this work as he is with those for the analysis of water. In this chapter one may learn that the "practice of placing cases of diphtheria in wards occupied by patients suffering from mixed diseases is not unattended by danger," and that "a feeling is gaining ground that special wards should be provided for this and other diseases"—and this was not written, as might be supposed, twenty-five years ago, but in 1892. It is to be hoped that the author will in no way relax the vigor of his language, and that he will do all that lies in his power to foster this feeling and aid it in gaining ground.

The chapters on "Warming and Lighting," "Climate and Meteorology," and "Soils and Building Sites" are very short—and it may be added, fortunately so. The chapter on "Food, Beverages, and Condiments" makes up in quantity what it lacks in quality. "Exercise" is disposed of in three pages, and "Clothing" in seven. Chapter IX., on "The Contagia; Communicable Diseases and their Prevention; Hospitals," while very bad, compares favorably with the rest of the book.

It is a pleasure to note that, although the book is one that ought not to have a wide circulation in this country, it is not entirely without merit; it is well printed and the index is excellent. C. H.

KIRKES' HANDBOOK OF PHYSIOLOGY. By W. MORRANT BAKER, F.R.C.S., and VINCENT DORMER HARRIS, M.D. Lond., F.R.C.P. Thirteenth edition. 8vo., pp. 884. Philadelphia: P. Blakiston, Son & Co., 1892.

No text-book that has successfully held its own through twelve editions in the struggle for existence needs the words of the reviewer to attest to its popularity or usefulness in the past. As an elementary book for the student, the present edition of Kirkes compares very well with most of the newer works of like nature; it has been ably revised, and, by the introduction of considerable new material, brought well abreast of the times.

That the editors have added little or no original matter in this edition will be of small moment to the busy practitioner and hard-pressed student, for whom the work is designed; to them its systematic arrangement and concise style will be particularly attractive and valuable.

So wide is the modern field of physiological knowledge that it has become no easy task to include within the scope of a medium-sized work the consideration of all that we now rank as important. In the Handbook the condensation of material has been, on the whole, judicious, but there are a few subjects which have hardly received their due share of attention; for instance, in the section devoted to the heart no reference whatever is made to the coronary arteries and their relation to cardiac action, a subject which, from its medical importance, is deserving of mention at least.

From the standpoint of those who attend our better colleges, in all of which excellent courses on microscopical anatomy are now given, probably an unnecessary amount of space in the book has been devoted to the histology of the tissues and organs; but for students whose opportunities are more restricted, and for practitioners wishing to revise the teaching of their younger days, this feature—to which the number and excellence of the illustrations add much—will be of especial value.

It is safe to predict, therefore, that the present edition of Kirkes' Handbook will meet with a success fully equal to that of former editions, and that it will continue to enjoy its due share of popular favor and confidence. F. W.

A HANDBOOK OF HYGIENE AND SANITARY SCIENCE. By GEORGE WILSON, M.A., M.D., F.R.S. Edin. Pp. 751. Philadelphia: P. Blakiston, Son & Co., 1892.

In pleasing contrast to the work of the younger Parkes is this excellent book by Wilson. This is the seventh edition, and contains considerable added new matter, and most of the book has been thoroughly revised and brought up to date.

Chapter I. is introductory. Hygiene is defined, and a very interesting historical sketch is given of its progress from earliest times. The chap-

ter on Food treats of the functions and constituents of foods ; food and work ; construction of dietaries ; preserved foods ; diseases which render flesh of animals unfit for human food ; examination of food, and the effects of insufficient or unwholesome food on public health, and these topics are well and interestingly handled. Much might have been added, however, to the value of this chapter had the author gone fully into the matter of adulteration of foods, which subject is certainly of very great hygienic importance. Of the chapter on Air, its Impurities and their Effects on Public Health, it may be said that while it is as a whole very good, it is hardly the best place to introduce the hygiene of occupation, which is a subject large enough to deserve a separate chapter and more extensive treatment.

Ventilation and Warming are, naturally enough, written to suit English climate and other local conditions. The method for conducting analysis of air is both well described and clearly explained.

The chapters on Water, Water Analysis, and Effects of Impure Water, are, as is usually the case with English books on hygiene, quite disappointing and far from being up to date, and the same may be said to a lesser extent of the chapters relating to Sewage.

The chapter on Climate and Meteorology is extremely interesting and instructive, and the same is true of the chapters on Communicable Diseases, Prevention and Disinfection, and Disposal of the Dead. The latter topic is usually handled with either an excess of sentiment or exaggerated ideas as to the danger of earth burial. This author, however, goes to neither extreme, and his sensible observations are a pleasure to read.

Other subjects treated in an interesting manner are soils, dwellings, hospitals, and vital statistics. The work closes with a chapter on the English Sanitary Laws and Official Duties of Medical Officers of Health, and an appendix.

As a whole the volume is to be highly commended, and deserves wide circulation.

C. H.

PRACTICAL AND ANALYTICAL CHEMISTRY: A COMPLETE COURSE IN CHEMICAL ANALYSIS. By HENRY TRIMBLE, Professor of Analytical Chemistry in the Philadelphia College of Pharmacy. Fourth edition, with illustrations. Philadelphia: P. Blakiston, Son & Co., 1892.

THE appearance of a fourth edition of this little work makes it apparent that it has met a want, and that its arrangement and contents are acceptable for the purposes for which it is intended, *i. e.*, for instructing the student in qualitative and some parts of quantitative analysis.

The author has arranged it in three parts, the first of which is an introduction to practical chemical work by the preparation of some of the elementary bodies and their compounds. The second and principal part is devoted to qualitative analysis summarized in charts, and in the third part the principles of gravimetric and volumetric analysis are given in a brief manner.

Although the book seems principally intended for students of pharmacy, it will also prove, by its concise and practical arrangement, a good and safe guide for the student of medicine in his practical studies of general chemical analysis, as well as for the physician who may be called upon to do analytical work.

L. W.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL.D.,

PROFESSOR OF CLINICAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL
AND HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

SOME DRUGS USED IN CHOREA.

DR. ARTHUR A. BOYER believes that there are two things which impress the student of therapeutics as applied to functional nervous disorders: First, the necessity for pushing familiar drugs to their physiological limits; second, the large number of new drugs reported as accomplishing startling results without a sequence of dangerous or unpleasant symptoms. The main reliance is on some drugs in excessive doses, and on others having profound effects; thus we are warranted in drawing some information from positive lesions the results of toxic doses of the drugs in question.

Of the drugs used in chorea, arsenic stands first and foremost. The effects of full medicinal doses long continued are, in many respects, similar to the toxic, which must, so far as possible, be avoided. There are many patients who, after having taken this remedy in moderately small doses from six months upward, bear characteristic marks of their treatment. The skin is pale, often sallow to the point of muddiness, the air is languid, the gait rather uncertain, the hands moist, flesh flabby, appetite poor, habit constipated, heart's action feeble (frequently accompanied with palpitation or irregularity), pulse soft, and respiration shallow. There is a lack of tone in the muscular system, which can be shown with accuracy in the case of the extrinsic muscles of the eyes, which are found to be in a weak state bordering on paresis. With an esophoria of high degree, the nasal rotation is poor; with an exophoria, the temporal rotation is imperfect; abduction and adduction are usually limited. The therapeutic effect of arsenic is probably twofold in chorea: primarily a depression of the spinal centres by reason of the poverty of the blood; in the second case, and to a much less degree, a reduction of the working power of the muscles by the direct effect of the drug. Chloral is useful in chorea, chiefly in the acute and violent cases, when the hypnotic

effect of the drug is pushed to the point of producing coma, and the patient kept under its influence until the nervous centres have had time to regain their lost equilibrium. The symptoms of chloralization are cited, and the doubt is expressed whether, from the large amount of the drug required, the effect is produced through its hypnotic action, so much as by the profound depression of the brain and spinal centres and direct action on the muscles themselves. The various antipyretics have been recently used, and, in some respects, they have a similar action. Antipyrine, it may be conjectured, effects a decrease in the excitability of the muscles themselves by the direct action of the drug, while the sensory centres in the spinal cord are depressed by degenerative changes in the blood. Thus in all remedies which have won reputation in chorea, the feature of most prominence is their power to cause a depression of sensation and motion to the point of paralysis; that in doses short of this effect they are not of much value; and, finally, that when they are administered in doses sufficient to check choreic movements, other systemic effects, such as general depletion of the forces of the body, degeneration of the blood, vascular dilatation, and cardiac and respiratory depression, attend their specific action.—*The Journal of Nervous Diseases*, 1893, No. 2, p. 112.

THE PHYSIOLOGICAL ACTION OF THYMACETINE.

DR. E. MARANDON DE MONTYEL has studied this drug, which is supposed to be an analgesic, hypnotic, and narcotic in dose from seven to fifteen grains. From his observations upon healthy human subjects, he believes that of all the influences exercised upon the economy by the drug, that upon the nervous system has been, without dispute, one of the most feeble; set forth as an analgesic, it shows itself to be without action upon the different sensibilities. Nor, indeed, does it show itself as a hypnotic, for it is demonstrated to be incapable of imposing sleep upon organisms which have not an urgent need of it. As for its action upon the intellect, it has appeared to be always absolutely *nil*; the mental condition has not been at all modified by it. The only changes in the cerebral functions produced by it have been stupor, with slight intoxication and headache; the latter is frequently met with and is most persistent. The muscular force appears to be increased, and the temperature is frequently elevated to half a degree or more. This drug increases the number of inspirations, the arterial tension, and the rapidity of the pulse. As for the secretions, it is not a diuretic, although it gives rise to symptoms on micturition, even to marked pain; it produces a marked and persistent bitterness in the mouth, a coated tongue, although the breath is not affected. It frequently excites heat and burning in the epigastric region, along the œsophagus, although of short duration, and these sensations may extend over the whole body. A marked thirst, which is impossible to satisfy, may persist all day and even at night; it may give rise to nausea without vomiting, or vomiting, total anorexia, and even notable gastric difficulty. The subject soon, however, becomes habituated to the drug, and all symptoms, save those of the digestive system, are diminished. The indications for the use of this remedy present great difficulty, for in the treatment of insanity it does not apparently possess any action upon the intellectual cortical centres.

Its efficacy as a sedative, and with greater reason as a hypnotic, is doubtful. In ordinary pathology, perhaps the spasmodic constriction of the ureterovesical sphincter which it produces may be utilized in certain cases of incontinence of medullary or neuropathic origin, but unfortunately this influence is very transient and is one of the first to disappear on habituation to the drug.—*Bulletin général de Thérapeutique*, 1893, 4e liv., p. 49.

THE TREATMENT OF ALCOHOLIC DELIRIUM.

DR. E. LANCEREAUX believes that this is one of the class of toxic deliriums, due to the specific action of the alcohol upon the cerebral elements, and the excitement is the cause of the insomnia and of the death which generally takes place from nervous exhaustion. Sleep, then, is necessary to control the delirium, and is the principal indication, and all means must be employed. To isolate the patient in a dark chamber, where nothing can excite the senses—if there is fear of his doing injury to himself, in a padded room—but to avoid the *camisole*, as it is likely to give rise to exhaustion: these are essential. Of the remedies which localize their action upon the nervous elements and moderate their reflex excitability, are the bromides, opium, morphine, and chloral. The bromides have not the energy of other means; their action is slow and will be put aside if the delirium is acute. Opium and morphine are advantageously employed, on condition that they produce sleep; but if large doses are necessary, it is preferable to use, instead, chloral, of which the effects are more certain and rapid. One condition is important—that the dose shall be sufficient to produce sleep; otherwise, instead of calming the unfortunate patient, it excites him. The dose, under these conditions, is sixty to ninety grains of chloral in five ounces of sweetened infusion of limes with an ounce and a half of syrup of morphine. If this does not produce sleep in ten minutes, one-sixth to one-third of a grain of morphine is hypodermatically injected, and the physician remains with the patient until he sleeps. If it be necessary, a second dose of chloral is given. The delirium ceases within twenty-four to forty-eight hours, and in some cases the patient can resume his occupation.—*Bulletin général Thérapeutique*, 1893, 6e liv., p. 122.

[The amount of chloral, as given, is considerably in excess of that usually deemed safe; however, the great urgency of certain cases may justify this dose.—R. W. W.]

HAFFKINE'S METHOD OF VACCINATION AGAINST ASIATIC CHOLERA.

DR. A. E. WRIGHT and MR. D. BRUCE give the details of this method as demonstrated by M. Haffkine, at Netley. This method is a process of chemical vaccination to bring about protection against cholera by acclimatizing the system first to a weak cholera poison (first vaccine), and afterward to a strong cholera poison (second vaccine). For adequate protection it is essential that this second vaccine should consist of the strongest obtainable cholera poison. The object which this vaccination has in view is to enable the system to tolerate such quantities of cholera poison as might be expected to be absorbed from the intestines during the interval which elapses between the invasion of the alimentary canal by the comma bacillus and the natural

elimination of that bacillus, which invariably takes place when convalescence becomes established after an attack of cholera. It does not aim at the impossible task of establishing a complete tolerance for an indefinitely large quantity of cholera poison. From laboratory experiments it is proven that these vaccinations do establish a high degree of tolerance for cholera poison in the case of guinea-pigs and for the "exalted" cholera virus in the case of rabbits and pigeons. The vaccines consist of emulsions of attenuated, and of "exalted" cholera cultures. They may be either of living cholera bacilli (living vaccines) or of bacilli which have been killed by the action of dilute carbolic acid (carbolized vaccines). The former present the advantage of possessing a more powerful vaccinating power; the latter, that of being perfectly safe to handle or leave about, and they do not appear to be appreciably impaired by keeping. An attenuated culture is prepared by a method in which the cholera bacillus is grown in media which are continually aerated at a temperature of 102.2° F. The "exalted" culture is prepared by growing the cholera bacillus in the peritoneal cavities of a series of guinea-pigs. As each guinea-pig of the series dies, the fluid which is found in its peritoneal cavity is removed, and afterward inserted into the peritoneal cavity of another guinea-pig, and so on through a series of twenty or thirty animals. The difficulty of keeping the fluid of the peritoneal cavity free from contamination during such a series of "passages" is very great, and can only be obviated by strict attention to antiseptic details. In passing the virus from one guinea-pig to its successor an intercalation of an interval of aerobic growth is necessary. This is obtained by placing the test-tube containing the peritoneal fluid in an incubator at 95° F. in such a position as to expose the greatest amount of surface to the atmospheric air for eight or more hours. This permits the multiplication of the comma bacilli in the presence of oxygen. The size of the guinea-pig chosen for the next animal in the series must be governed by the amount of peritoneal fluid obtained from its predecessor, and since large exudations, from the considerable amount of resisting power of the animal, are likely to contain few comma bacilli, a smaller animal should be chosen. The vaccines are prepared by inoculation of a standard agar tube from a pure culture; these tubes are then placed in an incubator at 95° F. for twenty-four hours. A small quantity of sterilized broth is then introduced into the tube and the layer of bacteria scraped off from the underlying agar and beaten into a fine emulsion. Carbolized vaccines are prepared in precisely the same manner, excepting as regards the fluid in which the emulsion is made, which is a 5 per cent. solution of carbolic acid, previously sterilized. Carbolized vaccines are preserved by sealing them in capillary tubes into which they have been aspirated. The vaccines are hypodermatically injected, under antiseptic precautions, by a simple syringe. The injection is made into the subcutaneous tissues and not into the depth of the muscles. The seat of election is under the skin of the flank half-way between the crest of the ilium and the lowest rib. The inoculation of the first vaccine is made from three to five days before the inoculation of the second. If the first vaccine is inoculated into the right flank, the left flank is to be chosen for the inoculation of the second vaccine.—*British Medical Journal*, 1893, No. 1675, p. 227.

THE INTERMITTENT ADMINISTRATION OF QUININE IN MALARIA.

DR. FRANCIS H. WILLIAMS presents very satisfactory evidence of the value of this method of administration of quinine, taking the temperature, and not the chill, as a guide. He has studied eighteen cases: twelve tertians, five quotidianas, and one of irregular type. In some instances the diagnosis was established by finding the *plasmodium malarix* in the blood. The dose of the quinine was twenty grains in solution, administered when the temperature began to fall, and the same amount upon the seventh, fifteenth, and twenty-second days. This method lessens cinchonism, which is apt to follow continuous doses, and as well the amount of the remedy which is necessary, and looks to the prevention as well as to the cure (Plehn). The remedy should not be given in pill form, but in solution, or, if it is important to consider the taste, in powder or in capsule. It is advantageous to give a cathartic with quinine, reducing the volume of the blood, and thus in effect the dose is made stronger. The anæmia must not be overlooked, hence iron, or even arsenic, may be indicated.—*Boston Medical and Surgical Journal*, 1893, vol. cxxvii. p. 229.

THE TREATMENT OF MALARIAL FEVER BY HELIANTHUS ANNUUS.

DR. MONCORVO has been investigating this remedy, made from the plant commonly known as the sunflower, which he has used in the form of a tincture of the flowers and leaves, and of other portions of the plant. The Russian peasants, believing in the value of this plant as a febrifuge, have used the leaves for a bed. A physician of that country, Maminoff, has employed the tincture of the leaves in the case of malarial fever. The observations quoted are sixty-one in number, and the ages vary from one month to twelve years. The dose has varied from fifteen drops to two and one-half drachms of the tincture, administered every two hours, four or five times daily. The alcoholic extract, which is preferable, is given in the dose of fifteen to ninety grains. The remedy has been well borne by children, even by the youngest. In the majority of cases the cure has been as prompt as with quinine, and, in those where the treatment has been regularly carried on, there has been no necessity for the use of this alkaloid, and that, too, in conditions of evident gravity. It appears, then, that quinine can be replaced by this remedy, given in the doses above indicated.—*Les Nouveaux Remèdes*, 1893, No. 1, p. 1.

NASAL INSUFFLATION OF SODIUM SOZOIODOL FOR WHOOPING-COUGH.

DR. PAUL GUTMANN has used about four grains of this remedy for each insufflation, the nasal cavity having been freed from mucus. The operation was so thoroughly done that the powder appeared at the other nostril. If a severe attack of coughing occurred, so that the powder, mingled with mucus, was expelled, the insufflation was repeated. Thirty cases were under observation. In the six cases from private practice the relief was marked, in between three to six days, as regards the frequency and severity of the attacks of coughing. In the remainder of the cases, those treated in the Poliklinik, there was frequently observed an improvement. The favorable results of the insufflation, into the nose, of various remedies for the relief of this disease

are not infrequent in medical literature, nor is the treatment new, since this method has been employed by Monti, Bachem, Finkler, and Michael.—*Therapeutische Monatshefte*, 1893, Heft 1, S. 15.

THE SALICYLATES IN THE TREATMENT OF PLEURISY WITH EFFUSION.

DR. GEORGE DOCK presents a very valuable paper, giving the conclusions based upon the literature and upon his own observations: 1. Salicylic acid and its salts are among the more effectual agents in the treatment of pleurisy with effusion. 2. In effective doses the remedy is harmless, and with proper selection of the preparation, and care in administration, causes little or no discomfort to the patient. 3. Salicylates act most promptly in pleurisies with serous effusion, of recent origin or of long standing, but they are efficient in simple dry pleurisy, and often act favorably in secondary pleurisy. 4. There is no evidence that they are useful in suppurative cases. 5. The drug acts as a diuretic, but may have an effect on the pathological process, or on the cause of the disease. 6. Salicylates have a more marked action in pleurisy than have the diuretics commonly so called. 7. "The duration of the treatment with salicylic preparations is less than with diuretics, common salt, or roborant medication." (Engster.) 8. The remedy can be used at the earliest period, and favorably affects all symptoms. 9. The drug may be given in the form of the acid, or any of its salts, in doses of one drachm of the former, or one or two drachms of a salt daily. In ordinary cases it is not necessary to give the larger doses, and sixty to ninety grains of sodium salicylate, or salol, daily may be considered full beginning doses, to be diminished one-third or one-half after the effect is manifest. 10. The ordinary precautions must be observed in giving the drugs, and during their administration the total amount of urine should be measured daily.—*Therapeutic Gazette*, 1893, No. 2, p. 78.

THE USE OF SUBLIMATE IN THE INTERNAL TREATMENT OF TYPHOID FEVER.

DR. LORANCHET recites the clinical histories of twenty-one cases—but one of which was fatal—seen within a year and a half. The form in which this remedy was used was that of the liquor of Van Swieten. He believes that in all cases the typhoidal infection was considerably attenuated by the sublimate, if not completely arrested. The symptoms remarkably improved, but the remedy was continued until the fever had completely subsided, and for two or three days thereafter. In the relapses it was immediately recommenced.—*Gazette hebdomadaire de Médecine et de Chirurgie*, 1893, No. 7, p. 77.

THE TREATMENT OF PERICARDITIS BY THE ICE-BAG.

DR. D. B. LEES draws attention to the serious consequences, in damage to the cardiac muscle and the formation of adhesions, which too often result from a pericarditis, after apparent recovery. It is clear that if the local application of ice has any influence in checking the subjacent inflammation, in so far it will tend to relieve the heart from depression, and thus act as a true cardiac tonic. He reports seven cases, which he believes are sufficient to

prove that the ice-bag, when used with reasonable caution, is a safe application in pericarditis; that it is usually liked by the patient; that it tends to check the violence of the local inflammation and to hinder effusion, and that it may even help to cause absorption of effusion which is already present. In view of the extreme importance of preventing, if possible, damage to the structure of the heart, it is believed that the introduction of the ice-bag into the treatment of pericarditis will be found to be a great advance in therapeutics.—*British Medical Journal*, 1893, No. 1677, p. 344.

ACUTE MANIA FROM INHALING CARBON BISULPHIDE.

DR. FREDERICK PETERSON reports three cases which made perfect recoveries within from two to seventeen months. In none was there any hereditary taint. All were young, healthy, and strong men, working in the same department of a rubber factory where they were exposed to the fumes of a mixture of CS_2 and S_2Cl_2 commonly used in the preparation of rubber goods. In all it was the first attack. The first and third cases were in such a maniacal condition that the subjective and somatic toxic symptoms could not be studied. The second case illustrated some of the peculiarities of bisulphide of carbon poisoning: the headaches, the electric *paræsthesiæ* throughout the body, the sensation of numbness in the tongue and head, the *globus hystericus*, the voracious appetite, the hilarious feeling of early intoxication, the terrible dreams at night, and the general muscular tremor. In none of the cases was neuritis discovered.—*Boston Medical and Surgical Journal*, 1892, p. 325.

THE SALOL TREATMENT OF CHOLERA.

DR. PATRICK HEHIR used this drug on the supposition that cholera is due to the presence, within the alimentary tract, of the comma bacillus of Koch, that salol prevents the multiplication of this micro-organism, and acts as a germicide upon this specific bacterium. The results of his first cases were satisfactory in the extreme, yet no conclusion could be arrived at because they were too few in number, and occurred at the expiration of the epidemic. His second series were paupers or low-class Hindoos—in fact, the worst possible cases. Ten grains of the drug were given every two hours to each case, with fifteen minims of spirit of chloroform; some patients received small quantities of brandy. The nourishment was iced milk and soda-water, and cold *coujee*. He concludes that salol is of no more value in the treatment of cholera than the many vaunted specifics that have preceded it, and the probability is that, in the epidemic under reference, better results would have been obtained under treatment based upon general principles.—*The Practitioner*, 1892, No. 393, p. 328.

THE TREATMENT OF PLAQUES MUQUEUSES.

PROF. FOURNIER believes that the treatment accomplishes a double purpose: 1. It relieves the patient of a troublesome lesion. 2. It destroys at once a formidable germ of contagion. Three facts are well established: 1. Mercury does not cure plaques muqueuses. 2. Cauterization is an heroic method of treatment. 3. It is necessary to add as adjuvant a special hygiene and

some topical application. The caustics in use are nitrate of silver and the acid nitrate of mercury, the latter for extensive lesions. These cauterizations should be repeated two to five times at intervals of four or five days. If the acid nitrate of mercury is used the first time, the nitrate of silver can be used for subsequent applications. For the hygiene: absolutely forbid tobacco and alcohol, demand perfect cleanliness of the mouth, and brushing of the teeth. If there is inflammation, soothing gargles are indicated; later the astringent gargles, as chlorate of potash, borate of soda. If there is much pain, coca leaves or cocaine may be used. Under no circumstances should corrosive sublimate be used, because of its taste and its blackening the teeth.—*La Médecine Moderne*, 1892, No. 57, p. 838.

SALOL AND SALICYLIC ACID IN THE BLOOD.

DR. PAUL CORNET, from his laboratory investigations, has demonstrated that after the ingestion of salol, the salicylic acid is transformed, before passing into the blood, into an alkaline salicylate, and secondarily that salicylic acid is found in the blood always in the form of an alkaline salicylate. This saline combination takes place not in the blood, but in the intestine, even in case of the ingestion of pure salicylic acid.—*Le Progrès Médical*, 1892, No. 52, p. 515.

COD-LIVER OIL THERAPY.

AN editorial reviewing this interesting question shows that oleum morrhue or any animal fat passes rapidly to the lungs—to be quickly and completely oxidized into carbon dioxide and water. And—as biological chemistry has proven beyond a question that the animal economy cannot take a substance composed of carbon, hydrogen, and oxygen, and join to it free nitrogen and sulphur or the nitrates and sulphates, to form a proteid molecule—all that can be derived from the rapid oxidation of the fat is heat, and through it, energy. No constructive or reparative material can be obtained by the ingestion of this or any other fat. In those cases in which there is avoidance of fats of all kinds, and in those others in which further sub-oxidation is necessary to set in motion dormant processes, this oil can be used to good advantage. In all other instances it is as clearly demonstrated that it acts as a positive alterative, by changing decidedly the oxidation processes of the system. But, unfortunately, the alterative effects are in the wrong direction—decreasing the perfection of the proteid oxidation, and often depriving unfortunate patients of the single chance for recovery which they might otherwise have retained. The free ingestion of it rapidly decreases the urea in the urine and increases the incomplete or imperfect products of nitrogenous waste. The more perfectly it is emulsified, the more detrimental it becomes, because thus it is more palatable and is less likely to produce digestive disturbance, and to be, therefore, refused entrance to the system; the emulsion also favors the absorption of an immoderate quantity—thus exhausting the oxygen supply, and rendering the sub-oxidation of the proteid molecule, with all its ill effects, doubly certain. It disturbs digestion and prevents the utilization of other and more valuable forms of food-stuffs.—*Merck's Bulletin*, 1892, No. 11, p. 617.

[It is quite likely that if cod-liver oil is freely administered without due

care and in unselected cases, the general effects would be a predominance of the evil over the good. The same is undoubtedly true of the use of an exclusively proteid diet in patients suffering from chronic wasting diseases, the disastrous results of which are so well known and so frequently met with. The clinical testimony is likely to hold the profession to its use, as against its abandonment on account of theoretical conclusions.—R. W. W.]

THE THERAPEUTIC ACTION OF BENZOSAL IN DIABETES.

DR. MARIAN PIATKOWSKI has made a careful study of this remedy, otherwise known as benzoyl-guaiacol, reporting eight cases. He concludes that it is a successful remedy in that it diminishes the amount of sugar irrespective of former treatment or the duration of the disease. In some cases the sugar entirely, in others only partly, disappeared. However, it was of more value when administered at the same time that a meat diet was insisted upon, than with a mixed diet. No disagreeable symptoms arose from the drug, which is tasteless and odorless, although the first daily doses of sixty to seventy-five grains frequently gave rise to diarrhoea.—*Wiener klinische Wochenschrift*, 1892, No. 51, S. 730.

THE TREATMENT OF HÆMOPTYSIS.

DR. FR. EKLUND has observed that with each ice-pill which was swallowed, or with each drink of cold milk that was taken, the bleeding increased; large quantities of blood were coughed up. It was clear that the irritation of the ends of the pneumogastric nerve in the mucous membrane must result in paroxysms of coughing, at the same time that the cold produces contraction of the vessels of the stomach, and in consequence a corresponding dilatation of the bloodvessels in the diseased area. Furthermore, intelligent patients fear nothing so much as the drinking of cold liquids, having noted that the coughing up of blood follows the procedure. The feet should be kept warm; washing the mouth and gargling with cold water should be avoided; lukewarm and mucilaginous potions should be substituted for the cold ones. Common salt dissolved in water should be avoided, because its secondary effect is to increase the fragility of the walls of the bloodvessels. An ice-bag over the bleeding-spot is recommended. For drugs, a grain and a half of sulphate of quinine, with three-quarters of a grain of extract of ergot, can be taken from three to six times daily, or a mixture of the fluid extract of cinchona and hamamelis. Lead acetate should be avoided in young persons on account of the danger of poisoning, and in older patients, to be of value, it must be given in large doses and combined with the acetate of morphine.—*Therapeutic Gazette*, 1893, No. 2, p. 83.

INJECTIONS OF BLOOD IN PNEUMONIA.

DR. FOURRIÈRE reports a single case of a patient in whom, during an attack of epidemic influenza of a month's duration, a pneumonia supervened. Treatment by means of sinapisms, alcohol, ether, digitalis, inhalations of oxygen, was without beneficial result. On the eighth day two injections of about three drachms of goat's blood were made, which were followed by an

amelioration of the symptoms. Four days after, a second injection was made. Two days later, hypodermatic injections of strychnine were added, and upon the next day an injection of six drachms of blood. Improvement now commenced and continued to complete convalescence. The observations of Bertin and Filleau have shown that these injections have a bactericidal action, and are at the same time powerfully tonic. The blood is withdrawn by an aspirator-needle from the jugular vein.—*Répertoire de Thérapeutique*, 1893, No. 1, p. 24. [The point of injection, the details of technique, and the precautions observed are not stated.—R. W. W.].

The following papers are worthy of notice:

"The Technique of the Subcutaneous and Intra-venous Salt-water Infusion," by DR. VON HACKER, in *Internationale klinische Rundschau*, 1892, No. 50, S. 2025; No. 51, S. 2065; No. 52, S. 2118. A carefully prepared and very complete paper.

"The Treatment of Chloroform-syncope," by Dr. A. A. BOBROFF, *Wiener medizinische Presse*, 1892, No. 52, S. 2065. He regards as irrational: Sprinkling with cold water, alternation of hot and cold compresses, cutaneous friction, tickling the nasal mucous membrane, inhalation of ammonia, rectal application of ice, irritating clysters, bloodletting, blowing air into the mouth or throat, tracheotomy; subcutaneous injection of strychnine, ether, alcohol, ammonia, digitalis; inhalation of nitrite of amyl, acupuncture of the heart and rhythmical compression of the same by the hands. As rational remedies he recommends: Inversion of the patient, auto-transfusion of blood; subcutaneous intra-venous injection of physiological salt solution, electrization of the phrenic, and artificial respiration by the method of Sylvester.

MEDICINE.

UNDER THE CHARGE OF

W. PASTEUR, M.D. LOND., F.R.C.P.,

ASSISTANT PHYSICIAN TO THE MIDDLESEX HOSPITAL; PHYSICIAN TO THE NORTHEASTERN HOSPITAL FOR CHILDREN;

AND

SOLOMON SOLIS-COHEN, A.M., M.D.,

PROFESSOR OF CLINICAL MEDICINE AND APPLIED THERAPEUTICS IN THE PHILADELPHIA POLYCLINIC; PHYSICIAN TO THE PHILADELPHIA HOSPITAL.

PERIPHERAL NEURITIS IN TYPHOID FEVER.

DR. JUDSON BURY, of Manchester, contributes a careful article on this subject to the *Medical Chronicle* (vol. xvi., No. 3). The writer refers in detail to the literature of the subject, and mentions several cases which have come under his observation. The evidence adduced is held to furnish abundant evidence that paralysis involving the whole or a portion of a limb sometimes

occurs either during or subsequent to the pyrexial period of typhoid fever. A case of Gubler's is mentioned, in which there was paresis of the palate (nasal twang) and paralysis of accommodation. A case of George Ross's is also quoted, in which the course and distribution of the paralysis was strikingly suggestive of diphtheria, although that disease could with certainty be excluded.

The following features are usually prominent and throw much light on the situation and nature of the lesion :

"1. The paralysis is usually partial in extent and degree. It may affect the whole of both lower limbs, or one limb, either upper or lower; but, as a rule, it is limited to certain muscles or groups of muscles, and often is strictly confined to the territory of a particular nerve.

"2. The muscles are wasted as well as weak, and when tested with electricity show the partial or complete reaction of degeneration. In a few cases contractures of muscles are mentioned, but it is to be observed that they were found not in a well-nourished, more or less rigid limb, but in one where some at least of the muscles were distinctly atrophied.

"3. The paralysis is almost invariably preceded or accompanied by some form of sensory disturbance. Thus the patient suffers from intense pain, continuous, remittent, fixed, or radiating, or he complains of numbness and tingling in the extremity, which subsequently becomes paralyzed. Anæsthesia, partial or complete, is of frequent occurrence, and, like the paralysis which it usually precedes, may be limited to the territory of a particular nerve.

"4. During the course of typhoid fever, the knee-jerks, as pointed out by Angel Money, are commonly exaggerated, and there may be ankle clonus. Gowers refers to excessive knee-jerk and foot clonus in association with paraplegic weakness in patients seen some months after the fever; and in the case of the man under my own care referred to above, there was exaggeration of the knee-jerks, together with paraplegic weakness and anæsthesia. But, as a rule, judging from the reports in which the reflexes are mentioned, paralysis of the lower limbs is associated with diminution or loss of the knee-jerks."

The atrophic character of the paralysis testifies to a lesion in the lower segment of the motor tract. While probably in some of the cases the paralysis is the result of an anterior poliomyelitis, the presence of sensory disturbance in the vast majority of the cases shows that the lesion, if in the cord at all, is not limited to the anterior horns, or involves both roots or the peripheral nerves.

A consideration of the symptoms observed is strongly in favor of an affection of the peripheral nerves.

The nature of the neuritis—whether accidental or toxic—is briefly considered.

Gowers' theory of local injury—from pressure or stretching of the affected nerve at a time when its nutrition is defective—may be a potent factor in some cases, but in others, according to the writer, evidence is not wanting which tends to show that the neuritis is due to a poison conveyed by means of the blood to the affected nerves, for, even where the chief functional dis-

abilities are limited to one nerve territory, there are frequently slight indications of a more widely distributed disorder.

In addition to the above group of paralyses there are a few observations showing that occasionally an acute paralysis of rapidly ascending course, and frequently terminating fatally, may develop during the course of or immediately after typhoid fever. On the relations of this variety with peripheral neuritis, consult Dr. Ross, *Medical Chronicle*, 1889.

"From a consideration of the preceding observations we are inclined to think that a multiple neuritis, initiated by the virus of typhoid fever, and frequently present in this disease, is not an unreasonable assumption. In one set of cases we may suppose that the action of the poison on the nerves is too slight to give rise to outward manifestations, or that these are masked by the general symptoms of the fever. In another set of cases the toxic influence on the nerves appears to be revealed by a series of irritative phenomena, such as neuralgic pains, cutaneous and muscular hyperæsthesias, exaggerated reflexes, and cramps and contractures of various muscles; while in a third group of cases the presence of an atrophic paralysis, its distribution, progress, and associations leave little doubt on the mind of the observer that he has to deal with a genuine parenchymatous neuritis, and frequently with one of wide distribution throughout the body."

ARSENIC IN CHOREA.

DR. WILLIAM MURRAY, of Newcastle, records in the *Lancet*, 1893, No. 3626, his favorable experience of the treatment of chorea with large doses of Fowler's solution.

The drug is given (to children) in fifteen- or even twenty-drop doses for a few days. This may be done without causing any disturbance of the stomach, provided the medicine be administered *during a meal*. The remedy cannot safely be administered in this fashion for more than a week. The writer states that he has only seen one case resist this treatment in the course of twenty years.

[*Note*.—I have quite recently seen an excellent result obtained in this manner in a case of chorea in a child of five years, which had resisted treatment with smaller doses of arsenic.—W. P.]

Murray also alludes to the good results obtained with large doses of arsenic in the treatment of diabetes, asthma, and atrophic emphysema of the lungs.

LACTIC FERMENTATION IN THE BLADDER.

SIR WILLIAM ROBERTS describes the case of a man of eighty-four years who had undergone lithotripsy five years previously, and subsequently used the catheter. "The freshly voided urine was very turbid, intensely acid, and contained sugar. Examined under the microscope, it was found loaded with bacteria, in the form of micrococci and bacilli, resembling those which are seen in souring milk. There were also numerous torulæ, having the characteristic appearance of yeast cells. Besides these adventitious organisms there existed a good many pus corpuscles and a corresponding (small) amount of albumin. I had several subsequent opportunities of examining the urine;

on one occasion the sample was withdrawn by catheter in my room and examined in the absolutely fresh state. All the specimens presented the same essential peculiarities. They were all sharply acid and saccharine and contained myriads of bacteria and numerous yeast cells. The patient complained of none of the usual symptoms of diabetes (there was neither thirst nor diuresis); but he reported that some time ago, for a period of three weeks, he suffered from urgent thirst and an excessive flow of urine, and that sugar was then found in the urine by his medical attendant. A remarkable feature of the case, from a clinical point of view, was the maintenance of a sharply acid reaction of the urine and the absence of recurrent formation of phosphatic concretions in the bladder."

The following explanation is suggested:

"In the bladder of this patient three fermentations tending to acidity appeared to be going on concurrently. The chief of these was the lactic fermentation, and lactic acid was identified as the main cause of the intense acidity of the urine. The second was the alcoholic fermentation engendered by the yeast cells, which were always present in the patient's urine. The third was the acetic fermentation, for acetic acid was clearly demonstrated in the distillate from the urine. I failed to obtain direct proof of the presence of alcohol in the urine. The alcoholic fermentation was probably only feeble in degree, and presumably the alcohol generated was usually changed, as fast as produced, by the agency of the acetic ferment into acetic acid. The patient, however, remarked that the urine sometimes had a 'vinous smell,' so that probably the urine did sometimes contain alcohol. There is no difficulty in accounting for the introduction of the germs of these ferments into the bladder in the present case. The catheter which was daily used furnished a well-recognized means of conveyance, and the patient admitted that he was not over-careful in the observance of antiseptic precautions. Finally, it may be confidently predicted that if the patient at some future time ceased to be glycosuric and still went on using the catheter in his careless way the urine would in no long time be in the grip of the ammoniacal fermentation, and he would then stand in danger of the formation of phosphatic concretions in the bladder. His glycosuria, in fact, protects him from this untoward contingency."

The writer suggests that the lactic fermentation might be turned to therapeutic uses—for example, in cases of intractable cystitis from ammoniacal decomposition and in recurrent phosphatic formations after operations for stone. From experiments made in the laboratory, a 10 to 20 per cent. watery solution of "Bynin" (malt extract) would be a suitable one to inject, say twice or thrice daily into the emptied bladder and retained there as long as possible.—*Lancet*, 1893, No. 3626.

PULMONARY SYPHILIS.

CHOMATIONAS (*Revue Méd. de l'Armée*, May, 1892; *Journ. des Mal. Cutan. et Syph.*, 1892, No. 10, p. 563) has reported the case of a man, twenty-seven years old, who, two years after an attack of influenza complicated by bronchitis and followed by hæmoptysis, presented great debility, a Hippocratic countenance, intense dyspnœa, elevation of temperature, insomnia, anorexia,

violent cough, with muco-purulent and blood-streaked expectoration, and profuse night-sweats. On physical examination no lesion was detected at the apices of the lungs, but over the middle lobes posteriorly there were evidences of consolidation and of a small cavity upon the right. The patient presented tegumentary and osseous evidences of a previous syphilitic infection, and on being interrogated admitted having had a chancre ten years previously and having had secondary and tertiary symptoms subsequently. Examination of the sputum failed to disclose the presence of tubercle bacilli. A diagnosis of pulmonary gumma was made, and a mixed treatment with inunctions of mercurial ointment and potassium iodide in increasing doses was prescribed. The patient speedily and progressively improved, symptoms and physical signs receded, and at the end of six weeks the patient was dismissed, practically cured.

In differential diagnosis the following considerations are to be borne in mind: (1) the anatomic localization of the lesions in the lungs, tuberculosis being usually situated at the apices, syphilis in the lower lobes; (2) the microscopic examination of the sputum, the tubercle bacillus being absent in cases of syphilis; (3) the history of the patient, personal and family; and (4) the results of anti-syphilitic treatment.

THE ANTITOXIC ACTIVITY OF THE BLOOD-SERUM OF CONVALESCENTS FROM CHOLERA.

LAZARUS (*Berliner klin. Wochenschrift*, 1892, Nos. 43 and 44) has made a study of the blood-serum of several cases in which recovery from cholera had taken place, with a view of determining if it possessed any properties by virtue of which it would be capable of protecting other animals from infection with cholera. He found that guinea-pigs that received intra-peritoneal injections of such serum and were subsequently treated with cultures of cholera bacilli were not infected, while control animals unprotected by preliminary treatment succumbed to cholera infection. The smallest quantity sufficient to confer protection upon the animals was 0.0001 grm., representing 1 : 3,000,000 of body-weight. If the protective serum-inoculation was made after inoculation with cholera bacilli, the result varied with the period of time that had elapsed. If the injection was practised at the same time as the inoculation, or before constitutional symptoms, as manifested by elevation of temperature, had appeared, the animal survived; otherwise death ensued. After symptoms of infection had appeared, even the largest doses were not capable of saving the animal.

AN OPERATIVE CURE OF AN ENORMOUS CYST OF THE LIVER.

BOYER (*Prager med. Wochenschr.*, Dec. 28, 1892) reports a rare case of cyst of the liver containing about ten quarts of liquid. The wall of the cyst was made up of altered hepatic substance. There was no trace of echinococcus fragments in the fluid, and no bile-salts or pigment. There was no epithelial lining of the cyst. There was no icterus present either before or after the operation. The swelling made its appearance four months previous to the operation without any subjective symptoms, with the exception of indigestion,

loss of appetite, and irregularity of stools, with alternating costiveness and diarrhoea. The characteristic symptom was a marked pain in the right shoulder. The most probable explanation, to the author, was an inflammatory condition with occlusion of one of the biliary ducts. The absence of icterus and of severe digestive symptoms, with such great changes in the liver, seemed to the author to be of great interest.

A CASE OF ABSCESS OF THE CAVITY OF RITZIUS.

MARTIN (*Annales des Mal. des Organes Genito-urin.*, January, 1893), from the infrequent occurrence of these abscesses, only forty-three cases having been reported, is led to report the case of a child, sixteen months old, rhachitic, having had digestive troubles, alternating diarrhoea and constipation, having been costive and without stool for some time, and catheterized for four days previous to admission. Just above the pubes was seen a round tumor the size of an egg; it could be distinctly separated from the iliac bones on both sides. The catheterism of the bladder showed it was not the distended bladder. An incision in the median line through the skin and linea alba was followed by the escape of about $3\frac{1}{2}$ ounces of pus. The finger passed down between the bladder and the abdominal parietes. The cavity was washed out with 1 : 4000 sublimate solution, drained, and an antiseptic dressing applied. The patient made a good recovery. The remarkable feature of this case was the extreme youth of the patient, this being the youngest age at which such abscesses have been known, though they are frequent in young children. In the diagnosis, tumors of the wall of the bladder, sacculated bladder, or stone in a sacculated bladder, are easily eliminated by catheterization and the use of sounds. The treatment is that of any abscess cavity.

THE VARIETIES OF THE PARASITES OF MALARIA AND THE NATURE OF MALARIAL INFECTION.

MARCHIAFAVA and BIGNAMI (*Deutsche medicin. Wochenschr.*, 1892, Nos. 51 and 52) record the results of a study of the parasitology of malarial fever. They come to the conclusion that malaria is an infectious disease caused by a hæmatozoön that does not belong to the order of schizomycetes, but to the protozoa (Laveran). The hæmatozoa appear as amœbæ, which develop within and at the expense of the red corpuscles, converting the hæmoglobin into melanin or rapidly causing a toxic necrosis, whence results anæmia. The amœbæ complete within the red corpuscles a cycle of existence that begins with the motile unpigmented forms (which in the process of development become pigmented) and terminates with the segmentation forms representing the multiplication of the organisms. The newly formed spores give rise to other amœbæ that, in their turn, also invade the red corpuscles. This cycle of life is regularly repeated coincidentally with the periodic recurrence of the paroxysms. Sporulation or segmentation is coincident with the beginning of a paroxysm (Golgi). During this cycle of existence the amœbæ probably give rise to the development of toxic substances, of the existence of which, however, direct evidence is as yet wanting. The evidence leads to

the inference that in the act of reproduction the amœbæ produce a pyrogenic toxine; during their endoglobular development, in the course of fevers of severe grade, they produce toxic substances that possess the property of causing necrosis of the red corpuscles, of separating the hæmoglobin from the protoplasm, and of inducing changes in internal organs. The morphological and biological peculiarities of the parasites differ among the various types or species of fever; whence the existence of several varieties or species of parasites seems reasonable. The differences in the biological and pathogenic peculiarities of the parasites justify the assumption of various types or species of fever. The most recent investigations lead to the acceptance of the following varieties: The amœba of quartan fever (Golgi); the amœba of tertian fever (Golgi); the amœba of summer-autumn tertian; and the amœba of quotidian. The pernicious types of fever are caused only by the last two, and the character of the attack is explicable by the biology of the parasites. The practical outcome of this knowledge is that it thus becomes possible to differentiate at once those cases that may prove pernicious from those that never do. The amœbæ of malaria occasion not only acute alterations of the blood, leading to hypoglobulia, but also changes in the vascular system of all and of the parenchyma of some viscera (spleen, liver, medulla of bone). These anatomico-pathological changes are in some organs but transitory, and largely explain the symptoms attendant upon the acute infection. In other organs (spleen, liver, medulla of bone) the changes are of a more permanent character and suffice to explain the anæmia, the symptoms of chronic infection, and the cachexia.

TWO CASES OF DIABETES ASSOCIATED WITH ATROPHY OF THE PANCREAS.

FREYHAN (*Berliner klin. Wochenschr.*, xxx. 6, p. 129) has reported from the service of Fürbringer at the Hospital on the Friedrichshain, two cases of diabetes, in both of which, after death, the pancreas was found disorganized in consequence of the presence of calculi in the pancreatic duct. In one case which occurred in a man, thirty-five years old, for half a year there had been occasional pains in the chest, slight cough, general malaise, and loss of strength and flesh. For two weeks there had been increased frequency of micturition. On physical examination the signs of infiltration of the apices of both lungs were found; the sputa contained tubercle bacilli. About two quarts of urine were passed in the twenty-four hours. The secretion had a specific gravity of 1024 and contained three and one-half per cent. of sugar. A careful regulation of the diet was followed by slight improvement, but the course of the case was steadily downward and death took place five weeks after admission to hospital. In addition to the lesions of tuberculosis in the lungs, the pancreas was found atrophied and replaced by a mass of fat. In the axis of the organ could be seen the pancreatic duct, dilated and varicose, literally stuffed with large and small calculi and fine sand.

The second case occurred in a woman who had been ill for four years, and had become reduced in weight to sixty-six pounds. There had been weakness, malaise, and a sense of drawing of the extremities, followed by sharp pains referred to the sacrum and to the extremities. Thirst and hunger became

excessive, and the quantity of urine greatly increased. Later, the appetite failed and emaciation became pronounced. Two quarts of urine of a specific gravity of 1050, containing a trace of albumin and eight per cent. of sugar, were passed in the twenty-four hours. In the course of the disease infiltration of the apex of the right lung took place. The quantity of urine became smaller, while the proportion of albumin increased and the proportion of sugar decreased. After death, in addition to the tuberculous changes in the lung and amyloid changes in the spleen and kidney, it was found that the pancreas was replaced by a mass of fat and fibrous tissue, a few lobules of normal parenchyma yet remaining in the head of the organ. The pancreatic duct was dilated, and contained sand-like material, while near the tail was a large calculus, the outer layer of which was constituted of organic substances, particularly cholesterin, and the inner layer of calcium carbonate.

BROWN-SÉQUARD'S PARALYSIS AFTER INFLUENZA.

EULENBERG (*Deutsche medicin. Wochenschr.*, No. 38, 1892, p. 845) has reported the case of a girl, seventeen years old, previously in good health, who, following an attack of influenza, attended with considerable elevation of temperature, complained of pain in the back between the shoulders, and of a painful, burning sensation in the right shoulder and in the right arm. In the course of a couple of months, progressive heaviness and weakness were observed in the right lower extremity, which was dragged somewhat in walking. A short time later complete paralysis of the right lower extremity manifested itself, together with paralysis of the rectum and bladder, and complete anæsthesia of the entire left lower extremity. The urine had to be withdrawn by means of a catheter and the bowels moved involuntarily without the consciousness of the patient. Some slight weakness of the right upper extremity was observed, which subsequently became more pronounced. Under treatment the symptoms referable to the bladder and bowel gradually disappeared, while the power of movement in the right lower extremity slowly returned. The right pupil was smaller than the left, the right palpebral fissure was likewise the narrower, and the right side of the face and the right ear felt warmer than the left. The diagnosis of a spinal hemi-lesion (disease of the right half of the spinal cord) at the level of the lower cervical and upper dorsal nerve-segments was based upon the typical distribution of the palsy, with atrophy, hyperæsthesia, and increased reflexes, in the right lower extremity; the analgesia and hypæsthesia to the middle line in the left lower extremity; the extension of the sensory disturbances to the level of the second or third rib; the atrophic paresis of the right upper extremity; in the distribution of musculo-cutaneous, radial, median, and ulnar nerves with analgesia and hypæsthesia of the posterior aspect of the lower half of the arm, the ulnar border of the forearm and hand, and adjacent portions of the dorsal and volar surfaces, including the little finger and the dorsal, volar, and ulnar aspects of the ring finger; and the pupillary and vasomotor thermic differences of the sides of the face. In addition to these features the case presented one other unusual phenomenon: the long extensor muscle of the great toe of the right foot displayed simultaneous faradic and franklinic reactions of degeneration—that is, direct or indirect faradic or franklinic

stimulation of the muscle was followed by slow, deliberate, and prolonged tonic contraction.

DOUBLE ANEURISM OF THE AORTA.

FAURE-MILLER and COTTET (*Bull. de la Soc. Anat. de Paris*, an. lxxviii, 5. sér. t. vii., f. 3, p. 75) have reported the case of a man, forty-five years old, who for two months had complained of difficulty in respiration, with frequent cough, the expectorated matters from time to time containing a little blood. The man was anæmic and debilitated. He presented no evidence of antecedent syphilis. On auscultation the respiratory murmur was found to be enfeebled, and there were signs of slight congestion, especially at the apex of the left lung, where the respiration was harsh and the percussion resonance impaired. The results of bacteriological examination of the sputum were negative. The heart was enlarged; its sounds were intensified; but there was neither duplication nor murmur to be detected. In the supra-sternal notch pulsation and slight thrill were appreciable, but there was no difference between the radial pulses. The attacks of hæmoptysis ceased after twelve days, but some four weeks later a paroxysm of marked dyspnœa occurred, with wheezing respiration and coarse, moist râles. There was also aphonia, and on laryngoscopic examination the left vocal band was seen to be paralyzed. There was complaint of a painful sense of heaviness of the left arm. Neither pupil was dilated. Potassium iodide, thirty grains daily, was administered, and some improvement followed; but three weeks later suffocation resulted from a sudden copious hemorrhage. On post-mortem examination an aneurism of the transverse portion of the arch of the aorta was found; and a second aneurism was found involving the posterior wall of the descending aorta on a level with the fifth dorsal vertebra, in which it had formed a hemispherical excavation. The first aneurism was larger than a man's fist and involved the entire superior surface of the arch of the aorta. The tumor had formed adhesions with the sternum. The ascending aorta communicated with it by a large opening, but the opening into the descending aorta was narrowed by the wall of the aneurism. The innominate, the left carotid, and the left subclavian arteries arose from the left portion of the aneurism, to which they were intimately adherent. Upon the left aspect of the aneurism ran the pneumogastric and the left recurrent laryngeal branch. The latter was intricately involved between the inferior surface of the aorta and the left bronchus. The trachea was flattened and displaced to the right. The aneurism had perforated the trachea, and through this opening the fatal hemorrhage had taken place. The aortic leaflets presented no lesion. The left lung was adherent at its base, and at the apex were found several indurated nodules.

SUBCUTANEOUS EMPHYSEMA IN A CASE OF DIPHTHERIA.

PINEAU (*Bull. de la Soc. Anat. de Paris*, an. lxxviii., 5. sér. t. vii., f. 5, p. 102) has reported the case of a man, twenty years old, who presented subcutaneous emphysema of the anterior and posterior aspects of the trunk, from the level of the lower jaw to that of the umbilicus in front, and to that of the lumbar region posteriorly, and also of the upper extremities down to

the wrists. There was dulness on percussion at the base of the left lung. The vesicular murmur was feeble. It was learned that two weeks previously, following contact with children who had croup, the man had complained of soreness of the throat. There was some cough, and in the expectorated matters was found false membrane. A particularly violent paroxysm was attended with intense pain in the chest, a sense of oppression, and almost total extinction of voice; and shortly afterward there developed the extensive subcutaneous emphysema. The man died sixteen hours after coming under observation. Upon post-mortem examination larynx, trachea, and bronchial tubes in both lungs were found lined with false membrane. The left pleural cavity contained a pint of serous-fibrinous exudation. The left lung was nowhere adherent. The lower lobe, however, was in a condition of red hepatization. The right lung was adherent to the chest-wall for an extent equal to a silver dollar, at a point corresponding with the supra-mammary region. Upon breaking up the adhesion a rupture of the pulmonary structure was disclosed, and it was in consequence of this that the subcutaneous emphysema had developed. From the pneumonitic area in the left lung, and from the exudate in the bronchial tubes, it was, by culture in various media, possible to demonstrate the presence of the bacilli of Loeffler. Other organisms were also found in the pneumonitic area and in the right lung.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE
UNIVERSITY AND GERMAN HOSPITALS;

ASSISTED BY

ALFRED C. WOOD, M.D., AND C. L. LEONARD, M.D.,

INSTRUCTOR IN CLINICAL SURGERY, UNIVERSITY ASSISTANT INSTRUCTOR IN CLINICAL SUR-
OF PENNSYLVANIA; ASSISTANT SURGEON, GERY IN THE UNIVERSITY OF
UNIVERSITY HOSPITAL. PENNSYLVANIA.

THE TREATMENT OF GRAVE VESICAL HEMORRHAGE BY SUPRA-PUBIC CYSTOTOMY.

PONCET (*Le Mercredi Médical*, 1892, No. 48) advises supra-pubic cystotomy in certain grave hemorrhages of the bladder, which do not yield to the usual forms of treatment. He prefers to call this operation epicystotomy, on account of its seat, in the anterior wall of the bladder, and also because it is a shorter term. Hemorrhages due to renal or urethral affections, or that due to gonorrhœal cystitis, are, of course, not amenable to this treatment. The cases in which the author advises epicystotomy are hemorrhages due to prostatic disease and to tuberculous affections of the bladder.

Hemorrhage in the prostatic cases may be due either to rupture of a

varicose vein, or it occurs as a complication of a high degree of cystitis. The author cites three cases upon which he operated; one was due to rupture of a vein, and the other two were of the latter class. The result was satisfactory in all.

In tuberculous bladders the repeated hemorrhages present a positive indication for the operation. Poncet refers to two cases of this class which were so much benefited that the subsequent hemorrhages were considered an accident of no gravity.

The author thinks the operation useful in that it enables any clots to be removed which otherwise might become infected, it relieves tenesmus, allows of spontaneous hæmostasis and entire rest to the bladder. In cases of severe cystitis the latter effect is most desirable. Recurrent hemorrhages may be easily dealt with, either by tamponment of the bladder or by the use of the actual cautery. Antisepsis should be practised. The operation is contra-indicated in those with a hemorrhagic diathesis.

PROLAPSE OF THE LEFT KIDNEY, ACCOMPANIED WITH SEVERE PAIN;
GENERAL PROLAPSE OF THE INTESTINES; NEPHRORRHAPHY WITHOUT
FRESHENING; CURE.

RÉCAMIER (*Ann. des Mal. des Org. Génito-urin.*, 1892, No. 10) reports the case of a female, aged twenty-three years, who suffered for several years with a very painful wandering kidney on the left side, and also with the symptoms of general enteroptosis.

Nephrorrhaphy was performed without freshening the kidney. The silk sutures were carried through the substance of the kidney. Muscle and skin sutures were then employed. No drainage; healing by first intention. The kidney remained fixed in its normal position, and complete relief from her former symptoms continued at the end of a year.

THE VALUE OF SUTURES IN CUT THROAT AND SURGICAL WOUNDS OF
THE AIR-PASSAGES.

HENRY MORRIS (*The Lancet*, 1892, vol. ii., No. 26) strongly recommends immediate suture in cases of cut throat and wounds of the air-passages. The author first used sutures on the air-passages in 1888, in a case in which a papilloma had been removed from the larynx. In this case the cricothyroid membrane, the cricoid cartilage, and the membrane between the cricoid cartilage and first ring of the trachea, were incised vertically, and afterward the wound was completely and accurately closed by chromicized catgut sutures. Since this time he has treated four cases of cut throat in the same manner. The method of operating consists in arresting all hemorrhage, either with ligature or torsion, cleansing the wound thoroughly and then stitching every tissue to its normal position, layer by layer.

Three of the cases made rapid recoveries. The fourth was unmanageable, and after tearing his dressings off the second night after the operation, and tearing the wound open, he died from exhaustion.

In treating these cases by this method, it is essential that the head and neck should be securely fixed during the healing of the wound. The

advantages to be obtained from the use of primary sutures in cases of cut throat, as recommended by Morris, may be summed up as follows: 1. The cut edges of each structure being brought into exact apposition, and so retained by the sutures, union by first intention is secured. 2. This rapidity of union allows of rectal feeding being employed up to the time the patient can swallow naturally. 3. The distress caused by feeding three or four times a day through a tube passed into the pharynx, or œsophagus, is thereby avoided. 4. The prevention of painful or distressing attempts at swallowing, attended by the escape of the fluid at the wound, and the excitement of troublesome spasmodic cough. 5. The prevention of the great risk of contraction or stricture of the air-passage or food-passage so likely to follow when the wounds have been allowed to heal by granulation. 6. The prevention of a temporary or permanent fistula opening into the air- or food-passage. 7. The avoidance of an alleged danger in cases where the epiglottis is cut through—viz., of suffocation from the detached portion of the epiglottis falling over the upper aperture of the larynx.

THE TREATMENT OF LARGE ARTERIAL VENOUS NÆVI BY EXCISION.

O'NEILL (*Dublin Journal of Medical Science*, 1893, 3d ser., ccliii.) advises the excision of large nævi, for the following reasons:

1. All the nævoid tissue can be more rapidly and thoroughly removed, so that there is not likely to be a reappearance of the nævus.
2. There is very slight hemorrhage, and it can be easily prevented or arrested by forcipressure forceps and ligatures.
3. There is no slough left in the wound.
4. The wound heals rapidly.

Two cases are cited which were subjected to this treatment. In both, the result was entirely satisfactory.

To control the hemorrhage during operation, hare-lip pins may be passed beneath the growth and a rubber ligature made to encircle the base, or the vessels may be caught with hæmostatic forceps, before being divided; all bleeding-points are to be ligatured.

THE ANTISEPTIC MANAGEMENT OF WOUNDS.

In a series of clinical lectures by SIR JOSEPH LISTER, delivered at King's College Hospital, and published in *The Lancet*, 1893, vol. i., Nos. 4, 6, and 7, the author describes the antiseptic technique which he employs in his surgical cases at this time. As his experience has accumulated he has been enabled to simplify very greatly his former methods. Inasmuch as it was known in pre-antiseptic times that wounds so constantly suppurated, and as Pasteur had demonstrated that the air of every inhabited place teems with microbes of various kinds, it was natural to deduct the conclusion that it was essential during an operation to keep the wound bathed in an antiseptic spray during the entire time it was exposed to the air.

It has since been learned, however, that the normal blood-serum is not a very favorable soil for the growth of bacteria, provided they are in an attenuated condition; in addition, the process of phagocytosis will destroy micro-

organisms if not in too large doses. Moreover, the microbes which are habitually in the air are not those which are to be feared in connection with wounds, unless they are introduced in very large quantity. For these reasons irrigation has been dispensed with, attention being given to preventing the entrance into wounds of the grosser forms of septic germs, such as those which exist in impure sponges, dirty instruments, or on imperfectly cleansed skin.

As the best means of purifying sponges, Lister now uses the agent which he first employed, namely, carbolic acid. The change from carbolic acid to corrosive sublimate, which was made later, was due to the publications of Koch, in which the superiority of corrosive sublimate as a germicide seemed to be satisfactorily proven. In its practical application to surgery, however, it has not borne out the conclusions reached in the laboratory. While it is true that under favorable conditions corrosive sublimate is more destructive to resisting spores than carbolic acid, still the most resisting spores are not those which the surgeon has to fear. The microbic enemies of surgery are almost entirely sporeless micrococci. It has been shown by Behring that carbolic acid of the strength in which it is used in surgery is more destructive to the *staphylococcus pyogenes aureus*, which is a very common cause of suppuration, than is corrosive sublimate. Inoculation experiments by Professor Crookshank, undertaken at the request of Lister, has demonstrated the fact that carbolic acid 1 : 20 will effectually destroy tubercle bacilli.

Professor Lister now purifies his sponges as follows: They are washed first with soap and water and afterward with soda, then thoroughly rinsed with water, and after drying are placed in carbolic solution 1 : 20, until again required for use. The instruments are placed in a 1 : 20 carbolic solution before being used, and the same solution is used for purifying the skin of the patient and the hands of the operator. The length of time necessary for the instruments to remain in the solution will depend upon the care with which they have been cleansed after last using. As a general rule, the length of time required for anæsthesia is a sufficient period for the immersion. The preparation of the field of operation may be postponed until anæsthesia is begun, when a few minutes' action of the 1 : 20 carbolic solution will render the parts sufficiently sterile. Carbolic acid is preferable to corrosive sublimate because it has a powerful affinity for the skin, penetrating deeply into its pores and mingling with fatty materials in any proportion. Corrosive sublimate does not possess this property in any degree.

During the operation the sponges are washed in 1 : 40 carbolic solution; the field of operation should be surrounded with towels wrung out of some trustworthy antiseptic solution, and the nurses and assistants should be carefully trained to avoid contact with any gross septic material. At the conclusion of the operation the wound may be gently washed with a 1 : 40 carbolic solution.

In the second lecture the following directions are given for those cases in which an operation may be called for, and no chemical antiseptic is at hand. The sponges, the silk threads, ligatures, and such instruments as will not be injured, should be well boiled; towels dipped in boiling water and spread about the seat of operation will diminish the chances of contamination of the wound from surrounding objects. Then thorough cleanliness in the ordinary

sense, by free use of soap and water for the hands of the surgeon and assistants, as well as the field of operation; the suture material may be either silver wire, silkworm-gut, or horsehair, which should also be boiled. For dressing wounds made under these conditions dry substances, such as absorbent cotton, wool, or lint, are far better than anything kept permanently moist.

Iodoform is considered to have a powerfully antiseptic influence on wounds, probably by inducing chemical changes in the toxic products of bacteria. In operation wounds in situations where it is impossible to exclude septic agencies, as those about the mouth or the rectum, the cut surfaces should be mopped with a solution of zinc chloride, forty grains to the ounce, and then dusted with iodoform. In compound fractures the author strongly advocates the use of iodoform. In operations when the integument is unbroken, however, with a sufficient space around for the dressing, its use is not recommended. It need not be applied to the interior of wounds under these conditions.

An external antiseptic dressing, to be ideally perfect, should have these qualities: 1. It should contain some thoroughly trustworthy antiseptic ingredient. 2. It should have that substance so stored up that it cannot be dissipated to a dangerous degree before the dressing is changed. 3. It should be entirely unirritating. 4. It should be capable of freely absorbing any blood or serum that may ooze from the wound.

After discussing the merits of carbolic acid, corrosive sublimate, and sero-sublimate gauze, Lister asserts that the most satisfactory antiseptic substance for the dressing is the double cyanide of mercury and zinc. This salt is but slightly soluble and, therefore, is permanent in the dressing; it is unirritating and amply competent to prevent germicidal development. Further, cyanide of mercury is far superior to the bichloride in inhibitory power. Before applying the double cyanide gauze it should be dipped in 1:20 carbolic solution. The usefulness of the gauze is impaired and made more irritating by dipping in bichloride solution even as weak as 1:4000. The bandages which are used immediately over the dressing may be prepared in the same manner as the gauze. When a free discharge is anticipated, a piece of thin mackintosh may be applied over the exterior of the dressing. In changing the dressings, 1:40 carbolic is the antiseptic employed. If the discharge is free the dressing may be removed in twenty-four hours, in other cases it may be delayed for some days.

THE SUCCESSIVE LIGATION OF FOUR LARGE ARTERIES IN THE TREATMENT OF ANEURISMS.

MACKELLAR reports in a clinical lecture (*The Lancet*, December 3, 1892), a case of successful ligation of both femoral arteries for popliteal aneurisms, a period of one year intervening; three years later the patient returned with a pulsating tumor behind and above the manubrium sterni; for this the right common carotid and the third part of the right subclavian arteries were simultaneously ligatured. The patient died three months later of hemorrhage. The autopsy gave the following instructive points. The silk used in ligating the arteries was boiled in bichloride of mercury solution. The usefulness of certain knots is well illustrated in the conditions found. In the right superficial femoral, tied with a surgeon's knot, the walls of the vessel were not in

contact, but the lumen was occluded for three-fourths of an inch, except that a bristle could be passed. The aneurism was converted into a fibrous mass. No trace of the ligature could be seen. The vessel was patent from the ligature to the aneurism. In the left popliteal the conditions were the same, excepting where the ligature, a "stay knot," had apparently occluded the vessel more thoroughly without injuring the coats. In all the cases the seat of ligature was enveloped in a small fusiform mass of connective tissue. In the right common carotid the coats were uninjured, the walls in contact, and the lumen above and below filled with clot; the ligatures were encapsulated in connective tissue. The third part of the subclavian ruptured in ligating, and was divided and ligated at both ends; the ends, separated by half an inch, lay in a connective-tissue mass. On the proximal side there was no clot whatever, although the inner coat was ruptured and recurved, and though the nearest branch was distant an inch and one-quarter. On the distal side the clot extended to the nearest branch—that is, for half an inch. The ligatures ulcerated through the vessel and lay in minute inflammatory cavities. The aneurism was one of the arch, sacculated, a portion extending upward in front of the innominate artery. The efficacy of treatment of these aneurisms by distal ligature is doubtful, but apparently gives temporary relief.

IRREDUCIBLE ISCHIO-PUBIC DISLOCATION OF THE HEAD OF THE FEMUR.

TILLAUX (*Rev. d'Orthopédie*, January, 1893) reports a case of irreducible dislocation of the femur; the head was found beneath the adductors, and the case was presented eight weeks after the accident. The position in bed was one of flexion, abduction, and rotation outward. After failure under anæsthesia to reduce, an incision was made over the head of the femur which was found to be bound firmly in place; it was resected, and the neck came easily into the cotyloid cavity. Recovery was uninterrupted, extension in bed being continued for one month. Patient was dismissed in good condition; rotation normal; flexion to a right angle with the pelvis was possible; abduction and adduction normal; movements voluntary and forcible; walking with a cane was easy, but could move readily without it; the only deformity on inspection was a slight flatness on the affected side.

THE TREATMENT OF PENETRATING WOUNDS OF THE ABDOMEN.

LÜHE (*Deut. militärärztl. Zeitschr.*, 1892, Hefte 4-7) is reported (*Centralbl. für Chir.*, December 17, 1892) as concluding from 324 cases which he collected and tabulated, including those of McCormac, Coley, and Morton, that in cases of undoubted perforation, laparotomy is indicated, but he does not recommend the diagnostic method of Senn, by the use of gas. The percentage of deaths in this series of cases, excluding vesical wounds, was 64. The mortality in 152 cases of shot wounds was 62.9 per cent., while for other forms of wounds it was 34 per cent. In those cases in which laparotomy was performed within the first twelve hours, the mortality was 58.2 per cent.; but in those cases in which it was delayed for a longer period, the mortality reached 79.5 per cent.; while the mortality in those cases in which the length of time was unknown was 52.4 per cent.

This shows that delay increases the mortality in operations after these wounds. The rule that immediate laparotomy is necessary must of course have some exceptions, as in military practice, where antiseptic precautions and the time necessary for the proper performance of the operation are wanting.

He believes the formation of artificial ani will be often necessary. He recommends the ordinary methods of hæmostasis and suture; the washing out of the abdominal cavity with salt solution in cases where there is urinary infection; drainage, especially the iodoform gauze drainage of Mikulicz. Transportation should be prohibited during the first few days at least.

THE TREATMENT OF EPITHELIOMA OF THE LIP BY EXCISION SO AS TO PREVENT REAPPEARANCE.

O'NEILL (*Dublin Medical Journal of Medical Science*, 3d ser., 1893, No. 253) details the histories of three patients upon whom he operated for epithelioma of the upper lip.

The method adopted is, first to remove the lymphatic glands if they are enlarged. If the submaxillary gland is involved this is to be removed also. In such cases it is necessary to ligature the facial artery in two places and cut between; the epitheliomatous ulcer is next to be excised, the whole thickness of the lip being removed, and at least half an inch of healthy tissue from each side of the ulcer. The removal of the affected glands is considered of equal importance to the removal of the primary lesion.

The patients were seen one, four, and two years' respectively, after operation, and there was no sign of reappearance of the epithelioma.

INTESTINAL OCCLUSION BY A GALL-STONE; LAPAROTOMY; ENTEROTOMY; RECOVERY.

POUZET (*Arch. Prov. de Chir.* t. ix, p. 184) is quoted as reporting (*Centralbl. für Chir.*, December 17, 1892) a successful laparotomy with uninterrupted recovery, after the removal of a gall-stone weighing twelve grammes (180 grs.). The operation was performed six days after the symptoms first appeared; the patient was a woman seventy-five years of age. According to Baudouin's table there have been only twenty-one operations performed for this complication, with but six recoveries.

CYSTOCELE IN INGUINAL KELOMOTOMY.

BOURBON (*Thèse de Paris*, G. Steinheil, 1892) is quoted (*Centralbl. für Chir.*, December 31, 1892) as basing upon sixteen cases collected and the two he reports, the theory that many of these complications owe their origin to the presence of lipomata on the wall of the bladder, and their connection with fatty masses that lie in a congenitally-formed hernial sac, bound to the abdominal wall by strong fibrous bands, while in the neighborhood are serous cysts, such as accompany congenital hydroceles. Such cystoceles appear as small, irreducible, painful tumors, situated in the middle of the hernial canal. As they are always formed by the extra-peritoneal portion of the bladder, they possess no peritoneal covering. More frequently these cysto-

celes are found accompanying large, long-standing enteroceles, and are brought down by the tension exerted upon the bladder by adhesions, through a widely distended internal ring. The theory of the author was not supported by the cases he reports, one being but briefly described, while the other was operated upon for a strangulated enterocele in connection with which was found a large cystocele covered by peritoneum. The relief of the constriction allowed the reposition of the parts, and it was then found that the extra-peritoneal portion of the bladder had been drawn to, but not into, the internal abdominal ring. The canal was sewn up. The patient recovered.

The difficulty of diagnosis which often accompanies these conditions leads the author to suggest that the artificial emptying and filling of the bladder will often prove of great service. In the majority of cases the condition is not known until the operation, and in the thirteen cases previously reported the bladder was incised in nine before the true condition was realized. The complications he mentions are stone-formation in the prolapsed portion, which in one case ulcerated through the skin, producing a vesical fistula and strangulation, which was accompanied by the ordinary symptoms, and in addition hydronephrosis, cystitis, and pyelitis. A diagnosis of cystocele calls for immediate operation, and only the more urgent contra-indications should prevent it. Wounds of the bladder-wall should be sutured, though the author considers it preferable to drain through the wound in cases of aggravated cystitis.

EPITHELIOMA OF TRANSVERSE COLON; RESECTION; RECOVERY.

REVERDIN (*Arch. Prov. de Chir.*, January, 1893) reports a very interesting case of resection of the transverse colon for epithelioma, with the establishment of an artificial anus, followed by recovery.

The patient, a woman fifty-eight years old, consulted the author on account of intense, persistent pain in the abdomen. Examination showed the abdomen to be swollen, dark in color, and œdematous. It was impossible to diagnosticate the condition present, and not until the operation, after the evacuation of a large quantity of pus, was the diagnosis made. The large amount of colon involved made an enterorrhaphy impossible. The distal end of the colon was, therefore, invaginated and sutured, while the proximal end formed an artificial anus just above the umbilicus. The tumor was a cylindrical epithelioma, nine inches in length, completely preventing the passage of solid fecal matter; it involved all the coats of the intestine, but there were no evidences of further spread of the disease, and no lymphatic involvement. The patient left the hospital on the twentieth day in good condition, and was heard from four months afterward, having gained in health and weight. The author remarks on the mildness of her symptoms, and the apparent tolerance of the system under such circumstances, the colon being loaded with a great mass of feces.

A NEW METHOD OF PURIFYING WATER.

SCHIPLOFF (*Rev. Méd. de la Suisse Romande*, December 20, 1892) describes a new method for the purification of water, which is called and is an oxidation of all organic material by the permanganate of potash or soda. It

removes at the same time living organisms, microbes, or others, and all soluble organic material. The power of the permanganate is indisputable; it is admitted to be fifty times as powerful as carbolic acid in destroying bacteria in cultures. It is, however, necessary, in order to certainly destroy all organisms, that there should be an excess of permanganate in solution, as shown by a faint purple color. It is not possible, however, to drink with impunity this excess, and this must be eliminated. Taking advantage of its great oxidizing power the author eliminates it by the addition of a little sugar, whiskey, brandy, or wine; the purple color disappears or changes to a yellow-brown, caused by the formation of the innocuous binocide of manganese, which can be allowed to settle or be filtered or even drunk with impunity. This is, however, an expensive method for preparing large quantities of water; animal charcoal or even ordinary charcoal may be substituted; this latter should be finely powdered in a mortar and added to the water after the permanganate, and then filtered through two thicknesses of cloth.

Great care should be exercised in keeping the mortar clean and pure, as the permanganate will not destroy the organic substances that may be contained in the charcoal. The charcoal can be used a number of times, and should be dried or heated after use. The cost of this method is very slight, one pound of permanganate sufficing for about 10,000 gallons of ordinary river water, while the most stagnant water can be made absolutely pure. In experiments, the author has rendered extremely toxic solutions of curare, strychnine, veratrine, and morphine absolutely harmless.

SURGICAL INTERVENTION IN TUMORS OF THE DURA MATER.

DELAGÉNIÈRE (*Arch. de Chir.*, February, 1893) reports a case of angiolithic sarcoma of the dura mater in which, after trephining, extirpation of the tumor, with resection of the dura mater, the patient made a good recovery. He draws the following conclusions from his study of the case: 1. Perforating tumors of the cranium, whatever their nature, have a special form of development. 2. In the majority of cases they originate upon the external surface of the dura, dissect it from the bone, perforate the bone, raise the integument, and finish by perforating it. 3. Anatomically they may be considered as pedunculated, having a base internal, a neck corresponding to the opening in the skull, and a subtegumentary intra-cranial portion. 4. Surgically, they are pediculated tumors originating from the dura, and the removal of that portion of dura and the tumor guarantees their total enucleation. 5. To remove them it is necessary to remove the external portion and sufficient bone to uncover the entire base; they should then be removed by "morcellement" (in fragments) and finally the dura resected, the entire portion upon which the tumor rested being removed. 6. This method was entirely successful in the case reported.

THE CAUSE OF DEATH AFTER BURNS.

SALVIOLI (*Centralbl. für Chir.*, January 28, 1893) claims that his experiments on mammals, as described (*Virchow's Arch.*, Bd. cxxv.), prove that death after severe burns is caused, or at least partially caused, by the closure of large arteries by thrombi. The microscopical examination of the mesentery

after the application of heat, between 120° and 130°F., shows a collection of the blood plaques and white corpuscles on the inner side of the arterial walls, and the formation in this manner of thrombi, which are carried into the circulation, as is evidenced by the numerous hemorrhagic infarcts in the parenchyma of the lung, and the numerous thrombi in the arteries after death. The slowing of the circulation is partly due to the thrombi and embolia, and partly to a narrowing of the arteries, caused by the clinging together of the red blood-corpuscles, which hinders the circulation. He thinks the belief that the blood plaques increase in number is an error. All the symptoms depending on the blood after burns are caused by the presence of the blood plaques. This he proved by reducing by defibrination the number of white corpuscles in a dog, from the proportion of 1:35 to 1:720. In these animals burning of the mesentery did not produce the same results, showing that the reduction of white corpuscles prevented the changes, and that they were due to the presence of the blood plaques in the blood.

THE SURGERY OF THE GALL-BLADDER.

LAUENSTEIN (*Centralbl. für Chir.*, January 7, 1893) in speaking of the difficulties encountered in draining shrunken gall-bladders after operation, commends highly the procedure recommended by Riedel, the use of a portion of parietal peritoneum in connection with or without the fascia transversalis, thus forming a canal for the drainage of pus and bile outward. He has found it useful in his cases, but in certain cases it is not sufficient, and in these he recommends the great omentum, as an easily obtainable and sufficient plastic material. It should be drawn up and its free border sutured to the bladder opening, and then used to connect it with the abdominal incision. In one case he made the entire canal of the omentum; in another, he combined it with the Riedel method; in both good results were obtained.

A CASE OF CEREBRAL INJURY, WITH LOSS OF SUBSTANCE; COMPLETE RECOVERY.

POPPER (*Centralblt. für Chir.*, February 11, 1893) reports the following case:

A girl, aged fourteen years, was kicked in the head by a horse, sustaining a depressed fracture of the left parietal bone, two by one and three-fourths inches in extent; the internal table was not so extensively injured. One side remained in position, the other three were depressed into the brain. Pulsation was absent. The position of the fragment over the longitudinal and transverse sinus, made the difficulty of elevation greater. A portion of the uninjured bone had to be removed, and when the depressed fragment was raised there was free bleeding from the sinuses; this was controlled by tampons of gauze, pushed under by the elevator and by digital compression on either side. The brain still pulsated; it was wounded to a depth of one-half to three-quarters of an inch. The wound was dried with carbolyzed gauze, no further antiseptic being used. After the splinters of bone were removed, the provisional tampons were replaced by layers of iodoform gauze, then the fragment of bone and further tampons of gauze, the whole being covered by

an antiseptic bandage. After the operation the patient was pale, the pulse frequent; three injections of ether produced good results. On the fifth day the tampons were partially and on the seventh entirely removed, without loss of blood. There was loss of speech for seventeen days. The patient was seen, completely cured, fourteen days previous to the report. The wound of the soft parts was entirely closed by scar tissue; there was no derangement of function or epileptic symptoms present. Continuous bending over, or long journeys, produced faintness, but there was no mental disturbance. That there is still time for the appearance of unpleasant symptoms the author does not deny, but thinks the speedy return of speech, unaccompanied by any paralytic symptoms, is noteworthy in a wound so situated, endangering the centres of both upper and lower extremities.

OSTEOPLASTIC OPERATION FOR NECROSIS.

LÜCKE (*Centralbl. für Chir.*, December 3, 1892) refers to an operation devised by him in 1888, claiming for it originality and precedence to that of C. Wagner. He describes the operation briefly as follows:

A linear incision is made extending over the space which the operation is intended to cover, through skin and intervening structures, and including the periosteum. An incision is then made with a chisel in the bone corresponding with this linear incision; then transverse incisions of the necessary lengths are made, in like manner, at either end of this linear incision, and the entire skin-periosteal-bone flap is raised and turned back. At the point opposite the cloaca a wedge-shaped bone-periosteal flap is raised from its longer side, and so placed as to fill the space where there has been loss of bone. By a subcutaneous operation over the base line of the flap, it may be cut slightly with a chisel, and this is found to assist and facilitate its removal. In the cases in which this method has been tried, the author has found it to hasten healing. It is more applicable to the diaphysis than to the epiphysis of bones.

THE TAMPONING OF THE BLADDER AFTER SUPRA-PUBIC CYSTOTOMY.

DESNOS (*Ann. des Mal. des Org. Genito-urin.*, January, 1893), after reporting three cases of supra-pubic cystotomy, in which the treatment of a tubercular ulcer in one case and profuse hemorrhage in the two others required the use of this measure, admits that the method is only applicable to a few cases; those especially adapted to this form of treatment being tubercular ulcerations, while it is a very serviceable stand-by in cases of rebellious hemorrhage. The tamponing is made effectual in the following manner: Two threads are passed through the sides of the wound, including the vesical mucous membrane, which afford an easy means of holding open the wound and distending the bladder. A siphon-tube of the Guyon-Perier pattern is then placed so that it reaches but does not press upon the floor of the bladder. Iodoform gauze in tuberculous cases, carbolized in others, covered with iodoform or other ointment, is then laid on the floor of the bladder, forming a passage from the ureters for the urine to the drainage-tube. The rest of the cavity is then carefully filled with layers of gauze, care being

taken to lay them in order and in such a manner that they can be easily removed. The ends of the wound may be then partly closed, but a large wound is preferable. It will be found that drainage is complete and that the tampons will not become wet with urine. It is, however, impossible to renew the tampon except under ether, but it can with safety be allowed to remain for from four to six days. Care should, however, be taken if iodoform be used, as symptoms of poisoning are liable to follow its free use in an irritated and inflamed bladder cavity. The tampon is well borne; there is neither pain nor imperative desire to urinate, and if it is well applied there will be no soaking with urine.

DERMATOLOGY.

UNDER THE CHARGE OF

LOUIS A. DUHRING, M.D.,

PROFESSOR OF DERMATOLOGY IN THE UNIVERSITY OF PENNSYLVANIA.

SYPHILITIC MYXŒDEMA.

DR. R. KÖHLER (*Berl. klin. Wochenschr.*, 1892, No. 30) reports a case of undoubted myxœdema atrophicum occurring in a woman forty-eight years of age, with enlargement of the thyroid gland which had existed from early life. One year before coming under observation she had general symptoms which were suspicious of syphilis, but this diagnosis could not be established. She was placed upon iodide of potassium, with the result of curing her, so that at the date of reporting the case a diagnosis of myxœdema could not have been made. The author asks if the disease could have been of the nature of an interstitial syphilitic deposit.

EUROPHEN AS A LOCAL DRESSING.

PROF. O. PETERSEN (*St. Petersburger medicin. Wochenschr.*, 1892, No. 14) considers the publications of Eichhof, Sichel, Lowenstein, and others, on this remedy, and gives his own views cautiously as to its value, coming to the conclusion that in minor surgery and in the treatment of chancroid, europphen is to be preferred to iodoform.

THE PENETRATION OF OINTMENTS.

AUBERT, of Lyons, the well-known physiologist and clinician (*Journ. of Cutan. and Gen.-urin. Dis.*, Dec., 1892), has studied the penetrating properties of ointments through the skin. The experiments consisted in incorporating atropine with the various substances, and then, causing the subjects to exercise, collecting and examining the sweat. When the application was made by simple inunction, oils and lard penetrate best, while vaseline, cerate, and lanolin penetrate scarcely at all. When the application is made, however,

with the aid of brisk rubbing, it was found that lanolin did best, because, by reason of its stickiness, friction always produced some erosions, or caused some hairs to be pulled out, thus favoring absorption.

POST-VACCINAL ERUPTIONS.

PAUL SCHIMMELPFENNIG (*Archiv für Derm. u. Syph.*, 1892, Heft 4) considers that eruptions of this nature may be called forth by an irritation to the vasomotor system, occasioned by foreign substances in the blood-vaccine lymph derived from absorption of the pustule. Of these may be mentioned general measly eruptions of short duration and without systemic disturbance, urticarial eruptions, erythema multiforme, and pemphigus, which latter, however, in some cases must be regarded in the light of a secondary infection.

In a second list may be classed certain latent diseases, which may be provoked by vaccination, as hereditary syphilis, eczema, and prurigo. Thirdly, eruptions may be due directly to infection caused by inoculation, as syphilis, erysipelas, and impetigo contagiosa.

THE BLOOD ELEMENTS IN SYPHILIS.

KOURIED, of Vienna (*Journ. of Cutan. and Gen.-urin. Dis.*, Dec., 1892), is of the opinion that previous works on blood-changes in syphilis lack scientific basis.

Examinations have recently been made of the blood in the first stage of the disease, in the secondary period, during the course of treatment and in untreated subjects. The proportion of hæmoglobin, one of the principal elements of the blood, is of great importance. From the very beginning of the disease, from the third to the seventh week, it is found diminished in the proportion of 20 per cent. Under the influence of treatment the proportion of hæmoglobin increases, but very slowly regains its normal color. In some cases of mild syphilis, untreated, the hæmoglobin acted in the same manner, the proportions increasing with the disappearance of the florid symptoms. In tertiary syphilis symptoms of grave alteration in the blood are noted. While the number of leucocytes is so variable that no defined conclusion can be drawn, the morphological changes are very noticeable. We may conclude from the observations that syphilis is a disease of the blood, and thus the marked anæmia often caused by the disease may be explained. Syphilis should be kept in mind as a possible etiological factor in such diseases as pernicious anæmia and tabes dorsalis.

PEMPHIGUS PUERPERALIS ET NEONATORUM.

DR. STAUB, of Posen (*Annales de Derm. et de Syph.*, Nov., 1892), believes that this variety of the disease results most frequently from intra-puerperal infection. He cites a case of grave puerperal fever, complicated with pemphigus, the infant also being attacked with pemphigus of the newborn type. Both recovered. In two other cases the infants succumbed in the course of the eruption, but the mothers recovered. The cause of the uterine infection is often to be attributed to midwives.

PSOROSPERMS IN CANCER.

TÖRÖK, of Budapest (*Annales de Derm. et de Syph.*, Nov., 1892), from his researches, arrives at the conclusion that the cellular bodies which have been described as the parasites of cancer are nothing more than nuclei of the epithelial cells, migratory cells, or blood corpuscles in a state of degeneration.

LEPROPHOBIA.

DR. A. LUTZ, now of San Francisco, who has had much experience with leprosy (*Journ. of Cutan. and Gen.-urin. Dis.*, Dec., 1892), warns against this condition of mind to which some persons are prone, and regards it as an act of humanity to combat all unproved and exaggerated statements, bearing in mind that the heredity of the disease is not proved; that the danger of passing intercourse with lepers is exceedingly slight; that contagion even by intimate and prolonged contact is by no means frequent in families living in a civilized way.

PEMPHIGUS.

DR. PETRINI, of Bucharest (*Annales de Derm. et de Syph.*, Nov., 1892), distinguishes three kinds of pemphigus: common chronic; foliaceous, primary or secondary; and vegetating. He has studied three cases resulting in death after six, twelve, and eighteen months. Twice he found some alterations in the posterior roots of the spinal cord; twice fatty degeneration of the liver was found; and in all the cases alterations of the peripheral nerves and lesions of the spinal ganglia were noted.

LUPUS ERYTHEMATOSUS.

MALCOLM MORRIS (*Journ. of Cutan. and Gen.-urin. Dis.*, Dec., 1892) believes that this disease is of an inflammatory nature, belonging to the erythemata, and having no relation to any specific micro-organism. It depends primarily on disturbance of the local circulation brought about by heat or cold, or by nervous influences. The term lupus is regarded as inappropriate, and "atrophyng erythema" is suggested as a better name. Two forms of the disease are recognized, the discoid and the aggregated, which is in accordance with the division of Kaposi. He believes that those cases where lupus erythematosus are said to be transformed into lupus vulgaris are really examples of lupus vulgaris erythematoides.

DERMATITIS HERPETIFORMIS.

STEPHEN MACKENZIE, of London (*Brit. Journ. of Derm.*, Jan., 1893), gives a lengthy, practical paper on this disease, illustrated with twelve cases, bringing out its polymorphic character, chronicity, and relapsing course. The vesicular and bullous varieties were the most common. In nearly all there was at some time more or less grouping on the herpetic pattern.

To secure rest at night, chloral and opium were both found useful. During the daytime, cannabis indica, from ten to twenty minims of the tincture thrice

daily, gave the best results. Antipyrine, in from twenty to thirty grains, best given in the evening, or at bedtime. Arsenic appeared to be curative in a few cases, controlled the disease to some extent in some cases, and failed altogether in others. Usually full and increasing doses to the point of toleration were given. Quinine occasionally appeared to be of service. No special form of local treatment is recommended, though the author believes that the method first described by Duhring (consisting of inunctions with strong sulphur ointment) is worthy of a trial.

LEPRA AND ITS BACILLUS.

DRS. DELÉPINE and SLATER (*Brit. Journ. of Derm.*, Jan., 1893), in a case of this disease, examined all the tissues of the body for bacilli. All attempts to demonstrate the bacillus lepræ in lymph, blood, or pus obtained during life were unsuccessful. Dealing with the lung lesions they quote numerous observers, of whom the majority are opposed to the existence of a true leprotic phthisis. The authors are of the opinion that *there is no method of distinguishing the bacilli of tuberculosis and leprosy by their staining reactions*. As to the distribution of the bacilli in the various organs, they occur in the skin (uniformly), in the mucous membranes of the mouth, pharynx, and larynx, in certain nerves, and in certain lymphatic glands, in bones, and in the liver, but are absent in the kidneys, supra-renals, thyroid, and the mucous membrane of the stomach, small intestine, and bladder. Of the various tissues, they are most abundant in areolar connective tissue, and then in lymphoid tissue. In epithelium they are rare, and in cartilage are absent.

TINEA FAVOSA CONTRACTED FROM ANIMALS.

DR. S. SHERWELL (*Amer. Veterin. Review*, Nov., 1892) reports some interesting cases of this disease communicated from mice. In one instance four members of one family were affected, having evidently been infected from pet dogs, one of which had previously been found playing with a sick mouse, which, from the description, had favus. Some of the mice were caught and the parasite was demonstrated. Instances of ringworm contagion from kittens are also recorded.

FOUR CASES OF CHEILITIS GLANDULARIS.

H. S. PURDON, of Belfast (*Brit. Journ. of Derm.*, Jan., 1893), who states that this rare disease was first described by Professor Volkmann, of Halle, reports four cases observed during the past twenty years. Three were in males, the other in a young lady aged twenty-three years, who was under his observation for three years, the disease being confined to the lower lip and its mucous lining. The lips were glued together in the morning; with exacerbations the lip became swollen, firm, or hard, with little or no pain. The eye could distinguish the mucous glands swollen and pouring out a muco-purulent secretion through the dilated ducts. The disease extended to the lining membrane of the cheeks and gums. Black wash with glycerin and the occasional use of nitrate of silver locally gave the best results. Arsenic and other internal remedies were of no benefit.

THE PIGMENTARY SYPHILIDE.

DR. R. W. TAYLOR (*New York Med. Journ.*, Feb. 18, 1893) contributes a carefully studied paper on this affection (with photographs and colored plates), stating that the primordial pigmentary anomalies due to syphilis consist essentially in a superpigmentation, which may in whole or in part be replaced by a corresponding loss of color or leucodermatous condition. This primordial hyperpigmentation is the essential pigmentary syphilide; all other discolorations are secondary processes, and in no manner entitled to be classed as pigmentary syphilides.

The affection occurs in three well-marked and quite distinct forms:

1. As spots or patches of various sizes.
2. As a diffuse pigmentation of greater or less intensity, which, sooner or later, becomes the seat of whitish spots, which gradually increase in size, constituting a retiform variety.
3. As an abnormal distribution of the pigment of the skin, in which some spots become lighter and others darker, in this manner a dappled or marbled appearance resulting—the marmoraceous variety.

THE ACTION OF THIOSINAMINE (ALLYLSULPHOCARBAMIDE).

HANS VON HEBRA, of Vienna (*Brit. Journ. of Derm.*, vol. iv., No. 10), has experimented with this drug, and makes a preliminary report. Thiosinamine is obtained from the volatile oil of mustard, and is a crystalline chemical product of constant composition, which, when subcutaneously administered, produces a local reaction without any general disturbance of the system. It exerts a favorable influence over lupous tissue, and renders cicatricial tissues soft and pliable. It has a specific action in diminishing glandular swelling. It favors the absorption of the products of exudation.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

GEORGE A. BERRY, M.B., F.R.C.S. EDIN.,

OPHTHALMIC SURGEON, EDINBURGH ROYAL INFIRMARY;

AND

EDWARD JACKSON, A.M., M.D.,

PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC; SURGEON TO WILLS EYE HOSPITAL, ETC.

MYOPIA THE RESULT OF CONSTITUTIONAL DISEASE.

DR. R. D. BATTEN (*Ophthalmic Review*, vol. xi., No. 123), taking up the comparison of myopia to rickets, urges that while the deformity and mechanical conditions that determine it and the local disturbances attending it have been carefully and minutely studied, the underlying constitutional conditions

that constitute the true causes of myopia have not received the study that has been accorded to the general nutritive changes of rickets. The dilatation of the eyeball is also like dilatation of the heart, in that it may be due to disease or strain, or to both acting together, and in that serious disease may not cause impaired function.

The constitutional condition which he believes underlies myopia is one which might reasonably be termed "vascular rickets," as it appears to depend on a yielding of the vascular and ocular walls. It might be defined as a disease chiefly of city life, the result of faulty nutrition, developing during the period of youth and growth, and producing deformities of the eye and cardio-vascular system.

In support of his view he presents observations of the association of the following conditions with myopia:

1. Spontaneous hemorrhages (epistaxis, menorrhagia, retinal hemorrhages).
2. Capillary congestion.
3. Cardio-vascular disease (high arterial tension, cardiac hypertrophy, valvular disease).

The cardio-vascular condition is regarded as a form of high arterial tension or the result of it. The pulse is large, full, rather slow, but within normal limits. The arterial walls feel thin, the tension is full, and often distinctly high. The pulse is distinctly recurrent. The heart shows signs of enlargement of very variable degrees, and this is probably due to both dilatation and hypertrophy. There is generally some alteration in the rhythm and accentuation of the sounds. An accentuation of the aortic second sound is perhaps most frequent. Well-marked valvular disease is also not infrequent.

The pulse-changes, while not very obvious, are such that anyone taking the trouble to observe a few cases thoroughly will be convinced of their existence. It is pointed out that while there are admirable descriptions of the condition of high-pulse tension as it occurs in the adult, there are none as it occurs in the young, in whom it gives rise to a different class of symptoms. That increase of blood-pressure is an efficient factor in the causation and increase of myopia, has been generally recognized and taught. But this increase has been regarded as merely local instead of general.

Dr. Batten regards myopia as more frequently acute in its onset and increase than is often supposed. He finds it closely associated with pregnancy and with certain constitutional diseases, as rheumatism, syphilis, alcoholism in young boys, typhoid fever, and phthisis—all marked by profound and general nutritive changes. The association of choroiditis with such diseases is usually recognized, and the association of choroiditis with myopia well-nigh universal. And he regards it as more rational to suppose that in the latter case both the myopia and the choroiditis are due to some underlying nutritive condition, than that the latter is due to the former. He is inclined to consider a high degree of astigmatism as having a similar origin. Eighteen cases of association of myopia with the various conditions mentioned are reported in abstract.

BLINDNESS DURING LACTATION.

E. NETTLESHIP (*Royal London Ophthalmic Hosp. Rep.*, vol. xiii., part iii.) reports a group of four cases belonging to a class that he thinks can be clearly

separated from the more numerous cases in which blindness arises from albuminuria of pregnancy, or from loss of blood in the confinement, or in which there is interference with vision by impairment of accommodation. None of these cases were seen at the time of blindness, or at least at the time of recent blindness, but in some of them the appearances, when seen, pointed with more or less certainty to the previous occurrence of optic neuritis. And it was probable that neuritis might have occurred in those where the disc and retina appeared quite healthy some years after the attack. He thinks, therefore, that these cases should be associated with those in which neuritis occurs from chronic anæmia.

In the first case the blindness came on while suckling her second child, then about three months old, became complete, and lasted several weeks. But complete recovery occurred on weaning it, and there was no subsequent recurrence. She did not nurse her subsequent children. One of the eyes showed the appearances of past optic neuritis when examined several years later. In a second case there was temporary failure of vision after a first confinement; and failure again, not followed by improvement, after her second confinement, sixteen months later. The eyes several months later presented the appearances of post-neuritic atrophy. In this case neither of the children lived, and of four other pregnancies she had but one living child, raising a strong suspicion of syphilis. In the next case the blindness occurred after suckling the child eighteen months in great privation and anxiety. Complete recovery followed weaning the child, leaving no ophthalmoscopic evidence of what had occurred. In the fourth case there was blindness of many weeks during the fifth lactation, followed by complete recovery, with no changes in the fundus. There was no recurrence with a subsequent lactation. Here also there was a suspicion of syphilis. With the foregoing is reported a case of blindness after acute loss of blood, with complete recovery, and partial recurrence from a similar cause many years later. While it is quite uncertain what connection lactation has with the occurrence of such blindness, and clear that it had no connection with it in one case, it is greatly to be hoped that those who have seen similar cases, especially in the earlier stages, will report them.

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC;
CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE;
CLINICAL LECTURER ON OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE;
VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

BACTERIOLOGY OF THE NORMAL AND FEVERISH PUERPERAL STATES.

THE question as to the relation of bacteria to fever, or its absence, in the puerperal state has been the subject of study by FRANQUÉ. Utilizing material in the Würzburg Klinik, he publishes in the *Zeitschrift für Geburts-*

hülfe und Gynäkologie, Band xxv., Heft 2, a series of observations with control experiments from which he draws the following conclusions: It is possible to introduce streptococcus pyogenes into a uterus free from bacteria recently after labor without producing more than a slight rise in temperature, scarcely exceeding the normal, accompanied by a very slight disturbance in the general well-being of the patient. The *bacterium coli commune* is capable of exciting fever in the puerperal state. Sapræmia is rare in the puerperal condition. It can only be diagnosticated after bacteriological examination of the lochia, as shown in the absence of pathogenic micro-organisms and the presence of saprophytic bacteria.

A SEVERE CASE OF OSTEOMALACIA DURING PREGNANCY GREATLY BENEFITED BY OÖPHORECTOMY.

A STRIKING example of the benefit following removal of the ovaries in pregnant patients suffering from osteomalacia is given by RASCH in the *Zeitschrift für Geburtshülfe und Gynäkologie*, Band xxv., Heft 2. The patient was forty-one years old, and was a multigravida. The birth of her last child occurred about a year before she came under observation. The history related that since the birth of the last child there had been pain in the back and disability in locomotion. Sharp pain was complained of in the right leg; the advent of the present pregnancy made these pains much worse, and the patient soon became absolutely unable to stand and scarcely able to move. On examination, the bones of the pelvis and general skeleton were found sensitive to the touch; the pelvis was found to be contracted, the patient's urine contained neither albumin nor sugar, her temperature after entering the hospital was usually 102°. Labor was then induced, and twins were delivered. The birth of the children, however, produced no improvement in the pain. The abdomen was accordingly opened, and the ovaries and tubes removed. The patient's improvement began on the third day after the operation, and continued to recovery. While the deformity remained the same, the patient was able subsequently to work, and is free from pain.

A FURTHER REPORT UPON TWO HUNDRED LABORS CONDUCTED WITHOUT INTERNAL DISINFECTION.

MERMANN reports (*Centralblatt für Gynäkologie*, 1893, No. 9) two hundred cases of labor conducted without internal disinfection. These cases comprised the application of the forceps four times, one case of perforation and extraction with the cranioclast, one embryotomy for neglected transverse presentation, six versions, comprising placenta prævia and other abnormalities, one case of decomposed hydrocephalus treated by puncture, five cases where the dead fœtus was slightly decomposed, and three breech presentations terminating normally. Other abnormalities of labor presented, making an interesting collection of cases. None of these cases died, nor was any one of them severely ill. Mermann's cases now number nine hundred without a death from septic infection, but one death having occurred, and that from rupture of the uterus in placenta prævia. But fourteen of these two hundred patients showed any considerable rise of temperature. Mermann

concludes from these cases that thorough, painstaking antisepsis applied to the external parts gives a mortality of *nil*; that under normal circumstances not more than one per cent. of rise of temperature after labor can be referred to affections of the external parts; three-fourths of one per cent. being caused by ptomaine infection; one-fifth of one per cent. of fever by pathogenic organisms already contained in the body; that when antisepsis is practised rigidly, but internal examinations are made, three per cent. of all rises of temperature result from small injuries received during the examination. Under these precautions, infection of the external parts is practically nothing.

ISCHIO-PUBIOTOMY.

IN the *Nouvelles Archives d'Obstétrique et de Gynécologie*, 1893, No. 1, PINARD reports a case of Farabeuf's operation known as ischio-pubiotomy. The patient was a multipara, thirty-two years of age, who had borne children normally, and had also had difficult labors. On examination, she was found to have a contracted pelvis whose antero-posterior diameter measured eight centimetres. The pregnancy was allowed to go to term, and when the first stage was well completed, the ischio-pubic branch and the horizontal portion of the pubis, five centimeters from the median line, were severed and the foetus delivered with Tarnier's forceps. A chain-saw was used in severing the parts. A considerable hemorrhage was checked by hæmostatic forceps. An enlargement in the size of the pelvis occurred after the section, varying from two to four centimetres in extent. After the delivery it was found unnecessary to suture the parts, as the cut edges remained in apposition. The only complication in the case was the occurrence of a sacral bed sore following the prolonged maintenance of the dorsal position.

THE EFFECT OF PURGATIVES, ADMINISTERED TO THE MOTHER, UPON THE NURSING INFANT.

IN the *Practitioner* for March, 1893, GOW reports the results of observations in the use of purgatives with nursing mothers. The drugs used were aloes, senna, cascara sagrada, and sulphate of magnesium. It was impossible to trace the direct action of senna, cascara sagrada, and aloes upon the infant when given to the mother, there being no direct evidence that they at all affected the bowels of the child. Sulphate of magnesium frequently caused looseness in the bowels of the infant.

[A recent experience has exemplified the truth of these observations. It was necessary to administer to a healthy primipara sulphate of magnesium, which acted upon the child's intestines much more promptly than upon those of the mother. A similar experience was met with when other purgatives, notably aloes, were tried with the same patient.—ED.]

DYSTOCIA CAUSED BY GREAT DISTENTION OF THE FŒTAL URINARY BLADDER.

AN instance of this remarkable complication is given by SCHWYZER, of Zurich, in the *Archiv für Gynäkologie*, Band xliii., Heft 2. The patient was a multigravida whose labor-pains failed early in labor. A small amount of

amniotic liquid had escaped, although she knew no reason for the rupture of the membranes. The abdomen was distended, and foetal parts could be felt with difficulty. The face was presenting, dilatation being complete, and a considerable tumor was felt upon the face. Closer examination revealed the fact that the head was too small for that of a foetus at term; the uterus showed well-marked fluctuation, and palpation was obscure. The patient was taken to a hospital, and the forceps applied under anæsthesia. It was necessary to perform embryotomy, amputating an arm, opening the abdomen, and puncturing a collection of fluid. The free escape of a clear fluid, colored with blood, followed; examination of the body of the foetus revealed an enormous distention of the urinary bladder, causing a cyst, which had been the hindrance to birth. Among others, SCHROEDER reports (*Lehrbuch der Geburtshülfe*, 1891) twelve similar cases.

TUBERCULOSIS OF THE PLACENTA.

AN example of this interesting and unusual condition is reported by LEHMANN in the *Deutsche medicinische Wochenschrift*, 1893, No. 9. The mother was aged twenty-six years, and complained of cough, headache, and general malaise. Six of her brothers and sisters died of pulmonary tuberculosis. The patient had borne a child after normal pregnancy, which perished of some disease of the head. Physical examination of the patient pointed to acute miliary tuberculosis or, possibly, malignant endocarditis. The patient perished a few days after coming under observation, but not until tubercle had been discovered in the choroid. Post-mortem examination revealed disseminated miliary tuberculosis in the mother. Examination of the body of the foetus failed to reveal lesions characteristic of acute tuberculosis. On the other hand, however, the placenta was found unmistakably tuberculous. An abundance of decidua cells was observed which were infiltrated with tubercle; also, in the chorion the sheaths of the small vessels were found infiltrated with tubercle bacilli.

A NEW METHOD OF ARTIFICIAL RESPIRATION IN ASPHYXIA NEONATORUM.

DEW describes in the *Medical Record*, March 11, 1893, a procedure for resuscitating an asphyxiated infant, which is as follows:

Grasp the infant with the left hand, allowing the neck to rest between the thumb and forefinger, the head falling far over backward; the mouth is straightened and also the larynx, the upper portion of the back and scapulæ resting in the palm of the hand; the other three fingers to be inserted in the axilla of the baby's left arm, raising it upward and outward. With the right hand the knees are so grasped that the right knee rests between the thumb and the forefinger, the left between the fore and middle fingers, this position allowing the back of the thighs to rest in the palm of the operator's hand. If the child is small, it will be found more convenient to grasp it by the ankles, allowing the calves, instead of the thighs, to rest in the palm of the hand. The next step is to depress the pelvis and lower extremities, so as to allow the abdominal organs to drag the diaphragm downward, with the left hand gently bending the dorsal region of the spine backward. This pro-

duces inspiration. The reverse of this movement, bringing the head, shoulders, and chest forward, causes expiration. If the thighs are brought forward upon the abdomen, the lumbar region is arched backward and the child so bent upon itself as to produce a powerful expiration.

CÆSAREAN SECTION FOR RHACHITIC DEFORMITY OF THE PELVIS.

GRIFFITH, of St. Bartholomew's Hospital, reports (*British Medical Journal*, 1893, No. 1682) a case of Cæsarean section for rhachitic deformity. The patient was a primipara with marked lordosis, who showed a considerable contraction in the pelvis, the external conjugate being five and one-half inches; the true conjugate was estimated to be two and one-half inches. The sacrum was convex from above downward and from side to side. The operation was performed without especial difficulties. After the usual operation, which resulted in the extraction of a well-developed male child, the uterus was sutured with silver wire, twelve sutures being used in the body and four thinner in the upper part of the cervix. The oviducts were ligated in the middle with fine silk. The progress of the case was uneventful, recovery promptly ensuing.

FOUR CASES OF CÆSAREAN SECTION.

SCHWARTZ (*Centralblatt für Gynäkologie*, 1893, No. 11) reports four cases of the Cæsarean operation for contracted pelvis.

The first had a conjugata vera of six cm. and a symmetrically contracted pelvis through which the fetal head could not pass. The operation was done early in the first stage of labor. The elastic ligature was used to prevent hemorrhage; the uterine incision was closed with silk prepared with corrosive sublimate. A good recovery from the operation followed.

A second was a Porro operation; the pelvis was symmetrically contracted. The patient had suffered from pleuritis some months before the operation, and fourteen days after the operation this disease proved fatal. The autopsy revealed extensive exudate in both pleural sacs and consolidation of the lungs.

The third case revealed scoliosis of the spine and other signs of rhachitis. The pelvis was of the flat rhachitic type. The circumference of the abdomen was very large, the uterus lying in the anterior portion of the tumor. When labor occurred the uterine contractions were not successful in bringing the head to engage. The Cæsarean operation was performed. The patient perished of septic peritonitis. The post-mortem revealed the fact that two stitches through the muscular layer had torn out and that the lochia had escaped into the abdomen.

The fourth patient was a case of marked kyphosis and lordosis of the spine. The pelvis was flattened. Silk was used to close the uterus and a drainage-tube was inserted within the cervix and vagina. Although all possible antiseptic precautions were taken, the patient perished three days after the operation from acute sepsis. The post-mortem examination revealed the uterine incision closed; the source of the septic infection was found in the three lower lumbar vertebræ, where caries was present.

TWO CÆSAREAN SECTIONS.

SIMON (*Münchener medicinische Wochenschrift*, 1893, No. 11) reports two cases of Cæsarean section, as follows:

The first had been delivered in a former pregnancy by craniotomy upon the living child. The patient had a highly contracted pelvis with a very thick and heavily ossified symphysis. The child was asphyxiated, but was revived. The placenta was firmly adherent and required considerable effort to remove it. The uterus was closed with silk and the peritoneum was united with fine silk. Considerable blood escaped from the uterus, ceasing on the use of ergot. The mother's recovery was uncomplicated.

The second case was that of a strong peasant woman whose skeleton showed no signs of rhachitis. She suffered, however, from double congenital dislocation of the hip-joints; the pelvis was symmetrically contracted. At the operation the placenta was found on the anterior wall of the uterus and was separated at the incision; the uterus was closed with silk and the peritoneum separately by the same material. Uninterrupted recovery followed the operation.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

THE USE OF ICHTHYOL IN GYNECOLOGY.

HERMANN (abstract of thesis in *Centralblatt für Gynäkologie*, 1892, No. 50) reports the result of observations in 150 cases in which he tested the action of ichthyol, either pure or in watery solution, in order to eliminate the possible influence of glycerin upon the local disease. All other treatment (hydrotherapy, massage, etc.) was suspended. He finds that the drug has a distinct absorptive and analgesic influence in all varieties of pelvic inflammation, with or without exudation. He found it particularly valuable in cases of carcinoma of the uterus, establishing a differential diagnosis between cancerous and inflammatory indurations, the latter being speedily affected by its use. Pure ichthyol also proved to be valuable as an application to the eroded cervix, and ichthyol ointment (50 per cent. in lanolin) in cases of fissured nipple.

OVARIOTOMY IN JAPAN.

ÔMORI and IKEDA, of Fu Kuo Ka, Japan (*Centralblatt für Gynäkologie*, 1892, No. 52) report one hundred ovariectomies, with five deaths, two of which were from complications not due to the operation. Among the tumors thirty-six were dermoid cysts—an unusual proportion, since Spencer Wells

encountered only twenty-two in one thousand ovariectomies. The authors can only explain their unique experience on the theory that among Japanese women the ovaries are especially predisposed to the development of dermoids.

COELIOTOMY FOR PERITONEAL ADHESIONS.

TIPJAKOFF (*ibid.*) reports the following cases, in which he opened the abdomen on account of persistent abdominal pain :

Case I. Unmarried girl, aged eighteen. A year and a half before she took cold at a menstrual period, and had an attack of localized peritonitis. Since that time she had complained of unbearable pain in the abdomen, with loss of appetite, constant vomiting, and obstinate constipation. On examination, the pelvic organs were found to be fairly normal, but the uterus was only slightly movable. The diagnosis of general intestinal adhesions within the pelvis was made, which was confirmed by operation. These were separated, as well as a firm adhesion of the omentum. The patient made a good recovery, and remained free from pain and vomiting, while her bowels moved normally.

Case II. A widow, aged thirty-eight, had suffered for three years with severe abdominal pains and obstinate constipation, also constant metrorrhagia, her symptoms being referred to a blow which she had received. Her uterus was anteфлекed and immovable, and there was general tenderness over the vaginal vault. Cœliotomy revealed firm adhesions of the omentum and intestines to the abdominal parietes and pelvic organs. After recovery from the operation there was marked improvement in the patient's condition, and the uterine hemorrhage ceased, the latter having doubtless been due to hyperæmia resulting from the venous obstruction caused by the adhesions.

Case III. The patient, aged forty-two, who had formerly been a prostitute, complained of uterine hemorrhage and constant abdominal pains. The uterus was anteфлекed and fixed, and the abdomen was extremely tender. Preliminary curettage was performed, followed by cœliotomy and the separation of firm intra-pelvic omental and intestinal adhesions. The patient made a good recovery and was entirely relieved.

The writer reviews the effect of adhesions in disturbing the intra-peritoneal circulation and preventing the normal movements of the viscera, with the result of causing functional disturbances, intestinal obstruction, and secondary disease of the pelvic organs. He believes that in working women, who suffer so severely as to disable them, cœliotomy is clearly indicated.

[We regret that the writer does not throw any light upon the question of the re-formation of adhesions after they have been separated, since many surgeons have not met with his success in the *permanent* relief of the distressing symptoms mentioned.—H. C. C.

THE ACTION OF MORPHINE ON THE FEMALE PELVIC ORGANS.

PASSOWER (*Centralblatt für Gynäkologie*, 1893, No. 2) affirms that the habitual use of morphine causes atrophy of the pelvic organs, and cites in support of this opinion the cases of two young women whom he kept under careful observation. In one instance amenorrhœa persisted until the use of

the morphine was stopped, when menstruation reappeared, and again ceased when it was resumed. Atrophy of the vulva took place, and the depth of the uterus within two years and a half diminished from three to less than two inches. The amenorrhœa was probably an indication that the atrophic process began in the ovaries, and subsequently involved the other genital organs. An analogy is seen in Claude Bernard's experiments upon dogs, in which atrophy of the submaxillary glands followed the prolonged administration of morphine.

BACTERIOLOGICAL EXAMINATIONS IN THE NEWBORN.

STROGONOFF (*ibid.*), from a series of examinations of the genital organs in newborn female infants, arrives at the following conclusions: 1. Immediately after birth the utero-vaginal canal contained no micro-organisms. 2. After the first bath microbes were found in the vagina, doubtless introduced through the water and oil inunction. 3. Early infection probably occurs most frequently in cases of breech-presentation. 4. In no instance were the microbes of a specific or infectious character. 5. In general, the vagina of newborn infants furnishes a favorable nidus for the development of micro-organisms.

GONORRHŒA IN THE FEMALE.

WITTE (*Centralblatt für Gynäkologie*, 1893, No. 4), from the study of a large number of cases, arrives at the following conclusions: 1. Vulvo-vaginitis in children is frequently due to gonorrhœa. 2. Gonorrhœa often remains localized in the vagina, and is cured by simple cleanliness alone. 3. Bartholinitis is more commonly due to puerperal infection, or to syphilis, than to gonorrhœa. 4. Granular vaginitis is a rare complication. 5. So long as suppuration does not occur, gonorrhœal salpingitis readily yields to ordinary treatment.

THE ISCHIO-RECTAL INCISION IN VESICO-VAGINAL FISTULA.

MICHAUX (*Centralblatt für Gynäkologie*, 1893, No. 5) advises that in cases of inaccessible vesico-vaginal fistula the patient be placed in Sims's position, and that an incision be made parallel with the cleft between the nates, beginning opposite to the anus and ending where the labium majus crosses the pubic ramus. The ischio-rectal fossa is opened without much bleeding, and the vagina is then incised to the extent of three or four inches, opposite to the fistula, which is thus easily exposed and closed in the usual manner. The vaginal wound is then united by a continuous catgut suture, and the wound in the ischio-rectal fossa is closed, with a strip of iodoform at its lower angle for drainage. In thin subjects the operation is easy, and in stout women no more difficult than the ordinary method.

CASTRATION FOR FUNCTIONAL NEUROSES.

PLAYFAIR (*Trans. London Obstet. Soc.*, vol. xxiii, part i.) arrives at the following conclusions as the result of his personal experience: 1. The removal of the adnexa is not justifiable in cases of pure functional neurosis,

2. Even when appreciable disease of the tubes and ovaries is present an operation should not be performed until palliative treatment has first been tried. 3. The results in hystero-epilepsy and hystero-mania are so uncertain that cœliotomy is not to be advised.

The consensus of opinion was entirely in favor of the author's conclusions, Spencer Wells being especially emphatic in his denunciation of operative interference.

THE INFLUENCE OF PURPURA HÆMORRHAGICA UPON MENSTRUATION AND PREGNANCY.

PHILLIPS (*ibid.*) says that the prognosis in these cases is nearly always bad, death being due to anæmia or sepsis. Abortion is the usual result of pregnancy in such patients. There is usually no evidence of definite pelvic trouble.

PREMATURE SEXUAL DEVELOPMENT IN CONNECTION WITH OVARIAN TUMORS.

CROOM (*Edinburgh Medical Journal*, February, 1893), after reviewing carefully the literature of ovarian tumors in children, reports the following interesting case: A girl, aged seven years, was admitted to the hospital in November, 1892. She had been perfectly well in May, but since then had been raped by a boy on several occasions, in consequence of which she had had persistent uterine hemorrhage. Shortly after the first coïtus her abdomen began to enlarge; when examined, seven months later, it presented the ordinary appearance of pregnancy at that period. The breasts were enlarged to the size of an orange, the areolæ being marked. The mons was unusually prominent and was covered with hair. There was a distinct median line of pigmentation on the abdomen, and a bruit could be heard over the tumor. The diagnosis of pregnancy was first entertained, but an examination under chloroform showed that while the cervix was large, soft, and patulous, a sound entered the uterus to the depth of a little over three inches, its withdrawal being followed by profuse hemorrhage. The tumor seemed to be separate from the uterus.

Ovariectomy was performed, a round-celled sarcoma, weighing six pounds, being removed from the left side. The patient made a good recovery, and when examined two months later presented an entirely different appearance. The breasts had diminished in size, the areolæ having disappeared; the labia minora were smaller, and the vaginal mucosa, previously dark and congested, had resumed its normal aspect. The cervix was small, the os closed, and the sound passed to the depth of only two inches, no hemorrhage resulting from its insertion. The writer infers that the unusual development of the genital organs was directly due to the stimulus of repeated acts of sexual intercourse in a subject who was naturally precocious.

THE BIOLOGY OF UTERINE FIBRO-MYOMA.

KLEINWÄCHTER (*Zeitschrift für Geburtshilfe und Gynäkologie*, Band xxv., Heft 2) from an analysis of forty cases of fibro-myoma confirms the statements of former observers without adding many new facts. The age of a tumor,

he says, cannot be inferred from its size, since after growing slowly for a long period it may suddenly begin to increase in size, reaching large dimensions in a few months. It is exceptional for a fibroid to cease growing before the menopause, nor does this period exert such a favorable influence in causing these neoplasms to disappear as was formerly supposed. Sometimes they grow more rapidly than before, and tend to undergo malignant degeneration.

The variations in size of fibroids probably depend upon either the original site of the tumors or their germs, as well as on individual peculiarities of their tissue, as suggested by Gusserow. A given tumor may also have received increased nutrition through vascular pseudo-membranes. Inflammatory processes around the uterus, as well as in the deeper layers of the muscular wall of the organ, undoubtedly exert some influence upon the growth of the tumor.

VAGINAL HYSTERECTOMY AND HIGH AMPUTATION IN CARCINOMA UTERI.

TIPJAKOFF's statistics (*Centralblatt für Gynäkologie*, 1892, No. 43) are unusually good. In 50 cases of malignant disease of the uterus treated during the years 1891 and 1892 (35 of the cervix, 12 of the body, and 3 of adenoma uteri) he performed simple amputation of the cervix 5 times, high amputation 25 times, and vaginal hysterectomy 20, without a death. He prefers complete extirpation when the entire cervix is diseased, but regards it as indispensable that the uterus should be movable, with no evidences of infiltration in the parametria. His technique does not differ from that usually followed. He employs silk ligatures entirely, and nearly always uses gauze drainage, changing the gauze on the fourth day.

[These statistics are particularly valuable, not only because of their excellent showing, but by reason of the fact that the operator is not wedded to any particular method, performing either extirpation or high amputation according to the existing indications.—H. C. C.]

RECURRENCE AFTER EXTIRPATION OF THE CANCEROUS UTERUS.

WEIL (*Prager med. Wochenschrift*, 1893, No. 6) believes that cancer is inoculable, as shown by clinical evidence in the case of malignant disease of the cervix uteri. It is highly probable that raw surfaces may be thus inoculated during an operation by the contact of an instrument which has been applied to the cancerous tissue. It is, therefore, not enough to absolutely exclude sepsis in total extirpation, but to prevent the inoculation of healthy tissue with cancer-germs during the operation by previous thorough curettage and cauterization, and by exercising great care that no instrument which has touched the neoplasm shall come in contact with the wound.

CYST OF THE PANCREAS SIMULATING OVARIAN CYST.

HERSCHE (*Wiener klin. Wochenschrift*, 1892, No. 51) reports the following interesting case: A multipara, aged thirty-two years, had noted for five years a tumor the size of an apple to the left of the umbilicus, unaccompanied by pain or a history of previous injury or inflammation of the

gastro-intestinal tract. It diminished in size, but again resumed its original dimensions. On examination it was felt through the anterior vaginal fornix to the left of the uterus, and indistinct fluctuation could be obtained. The diagnosis of ovarian cyst was made, and coeliotomy was performed. The pelvic organs were found to be normal, the tumor being a cyst which sprung from the tail of the pancreas and was so adherent toward the vertebral column that it could not be enucleated. Nearly two quarts of chocolate-colored fluid were withdrawn and the edges of the cyst were stitched to those of the wound. The patient made a good recovery and was quite well six months after the operation.

PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

JOHN SLADE ELY, M.D.,

PROFESSOR OF PATHOLOGY IN THE WOMAN'S MEDICAL COLLEGE OF THE NEW YORK INFIRMARY;
ASSISTANT IN PATHOLOGY IN THE COLLEGE OF PHYSICIANS AND SURGEONS; PATHOLOGIST
TO BELLEVUE HOSPITAL; AND ASSISTANT PHYSICIAN TO THE ROOSEVELT HOSPITAL
OUT-PATIENT DEPARTMENT.

EMPHYSEMA OF THE LUNG.

THE exact pathology of emphysema of the lung has been shrouded in an obscurity quite remarkable in view of the great frequency of the disease. The old idea, that the trouble was merely a dilatation of the air-vesicles as the result of long-continued and excessive intra-alveolar pressure, has gradually been abandoned. We now know the increased size of the air-spaces to be due to disappearance of the alveolar walls separating adjoining air-vesicles, and their resulting mergece.

Fastening upon two constantly noticed characters of the lesion as observed by him (its greater intensity on the surface of the lung, particularly at the edges, and the disappearance of anthracotic pigment from the emphysematous areas), GRAWITZ (*Deutsche medicinische Wochenschrift*, 1892, No. 10, 201) is led to the belief that the disease is primarily a degeneration of the connective tissue of the alveolar wall dependent upon defective nutrition, either as the result of defective blood-supply, inflammation, or senile decay. Three forms of the disease are distinguished in accordance with their different modes of production.

The experimental production of the first of these varieties was observed by Grawitz in rabbits, which had been made to inhale phosphoretted hydrogen. This poisonous gas induced œdema of the lungs, which, in a few days, led to marked degeneration of the connective tissue of the alveolar walls, and later, union of adjoining air-vesicles with the formation of an emphysema typical in every respect. To this form of emphysema he applies the adjective "hydropic," and he believes it to be the form of the disease which, in man, so

frequently complicates disease of the kidneys and heart, with resulting impairment of the pulmonary circulation.

The second form of the disease is called by Grawitz "inflammatory." It is thought to depend upon degeneration of the connective tissue of the lung consequent upon chronic inflammation. The author has elsewhere shown that degeneration of connective tissue is accompanied by gradual disappearance of the fibrous element and return to a more cellular condition. This implies loss of strength, and it has also been shown that the connective-tissue cells, under these circumstances, are capable of becoming wandering cells, and frequently show a tendency to remove dead tissue or foreign particles. These cells, containing anthracotic pigment, have been observed by Grawitz in the lymph spaces of the lung in his cases of emphysema, and he believes the disappearance of pigment from the emphysematous areas to be due to their phagocytic action.

The third variety of emphysema, the "senile" or "atrophic" form, is thought to be only a part of the general degenerative process throughout the body. Impairment of circulation and inflammatory changes are not infrequently also associated in its production, but it is not infrequently observed without these.

THE ETIOLOGY OF PLEURISY AS IT BEARS UPON PROGNOSIS AND TREATMENT.

THOUGH pleurisy may be regarded as among the best-understood diseases in so far as its pathology and symptomatology are concerned, it has few equals as regards the difficulty of rendering a correct prognosis. Why, of two cases precisely similar to all appearances, should the one quickly go on to recovery after a single tapping, while the other hangs on most persistently or develops into empyema in spite of every care on the part of the physician? Nothing is more unaccountable than the great diversity in the course of the disease under apparently identical circumstances. Furthermore, the greatest difference of opinion obtains as to the treatment best suited to its cure. Any observations, then, which may throw light upon its prognosis, and which may serve to establish its treatment upon a firm rational basis must be welcomed with more than usual interest.

The study of the past few years upon this subject has demonstrated the presence of several different species of pathogenic bacteria in pleuritic exudates, both serous and purulent, and as these observations have accumulated it has been possible to trace a relationship between the severity and duration of the disease and the species of micro-organism present. The most recent and one of the most careful of these studies is reported by PRINCE LUDWIG FERDINAND in the *Deutsches Archiv für klinische Medicin* (1892, l. 1), and as the conclusions there reached are substantially in accord with those of most other observers, it has seemed proper to present them here somewhat in detail.

In the investigation a small amount of the exudate was withdrawn from the chest by means of an aspirator. A portion of this was examined morphologically in stained cover-glass preparations; from another portion plate cultures were made; and animal inoculations were undertaken, as a rule,

with the remainder. In this way 23 cases were examined. In 5 of these the diplococcus pneumoniae alone was found; in 3, the staphylococcus alone; in 5, the streptococcus alone; in 2, the diplococcus and streptococcus together; in 1, the staphylococcus and streptococcus; in 2, the bacillus tuberculosis; and 5 were found to be bacteria-free.

All the cases in which the diplococcus pneumoniae was found accompanied acute lobar pneumonia. In 2, the pleuritic exudate was serous; in 1, sero-purulent and scanty; in 1, purulent from the start; and in 2, serous at first, but later purulent. In one case pericarditis was also present. In all the cases in which the diplococcus was found alone, the course of the disease was comparatively short, and recovery was rapid, though, in the two empyema cases, not until resection of a rib was performed, after waiting about three weeks in the hope that spontaneous resorption might occur.

In one case in which the examination was undertaken four days after crisis of the pneumonia, though the diplococci were seen on microscopical examination to be very plentiful in the exudate, both cultures and animal inoculations were negative, suggesting the death of the diplococci at the time of or very soon after the crisis. This observation is of interest in connection with what is known regarding the short life of the diplococcus pneumoniae in pure cultures, and suggests a possible explanation of the shorter course and more favorable outcome of pleurisies caused by that germ.

Prince Ferdinand has found record of 200 cases of pleurisy in which the diplococcus pneumoniae was found alone.

The etiological relationship of the ordinary pyogenic bacteria to empyema has long been universally admitted, but it is only recently that attention has been called by Levy to the fact that they may also be the cause of serous pleurisy not advancing to purulency. This observation has been confirmed by Prince Ferdinand in two of his cases in which the staphylococcus alone was found. In both of these the course of the disease was comparatively short and recovery was perfect; in the first case without operative treatment of any kind; in the second, after aspiration alone.

Of the 8 cases in which the streptococcus was found, 4 followed influenza, 2 pneumonia. In 2 the exudate was at first serous, but afterward became purulent; the others were empyemas from the start. All were severe cases, necessitating resection of ribs. Three ended fatally, and in the others convalescence was very slow.

It has long been supposed that many cases of pleurisy with effusion have their origin in a tubercular process in the pleura. Considering the difficulty attending the detection of the tubercle bacillus in such fluids, the failure to find it in suspected cases has not been regarded as opposed to this view, and recently its detection in the exudate in 31 cases of pleurisy has led some to express the belief that all cases in which bacteria could not be found in the exudate must be tubercular. While pointing out the fallacy of this extreme view, Prince Ferdinand is still forced, as the result of his studies, to admit that a very large number of such pleurisies must have such origin. In 5 of his cases in which bacteria could not be detected in the pleuritic exudate, he was able to find unmistakable evidence of tuberculosis of the lungs (physical signs, tubercle bacilli in the sputum, and, in 2 cases, autopsy), and

in 2 empyema cases, which at first failed to reveal bacteria, tubercle bacilli were discovered after more careful examination. He therefore concludes that, when there is no history of acute pneumonia or neoplasm of any kind, when there is little tendency to absorption of the exudate, and particularly if it be at the same time sanious, the failure to find bacteria in the exudate may be regarded as strongly pointing to a tubercular origin of the pleurisy.

The bearing of these facts upon prognosis and treatment is not far to seek. Prince Ferdinand groups the various pleuritic exudates in an ascending series as regards intensity as follows: 1. Serous pneumococcus exudates. 2. Serous staphylococcus exudates. 3. Pneumococcus empyemas. 4. Staphylococcus empyemas. 5. Streptococcus empyemas. A bad prognosis also naturally attaches to exudates resulting from tuberculosis and sepsis.

The streptococcus exudates, being the most severe, should be radically treated by early resection, even though they be serous at first, for they will most certainly later become purulent. Unless thus early and vigorously treated these cases are apt to prove very severe, and often fatal as the result of septic absorption.

In the case of the staphylococcus exudates the problem is somewhat more difficult, as the prognosis is much less certainly bad. Aspiration and careful observation of the course of the disease are here recommended, when the exudate is serous. If it become purulent, however, it may justly be considered that the process is becoming more intense, and resection is then indicated.

When the diplococcus pneumoniae is determined to be the cause of the exudate, whether serous or purulent, the prognosis may be regarded as good, other things being equal, and Prince Ferdinand recommends waiting for about three weeks before resorting to radical operative treatment, in the hope that spontaneous absorption may take place. Even then he advocates thorough thoracentesis first, trusting that no second accumulation of pus may occur. If this, however, should result, nothing remains but resection, and a speedy cure may be expected after thorough drainage of the chest.

In conclusion, Prince Ferdinand strongly urges the bacteriological examination of the exudate in all cases of pleurisy, and the importance of making the treatment accord with the information so obtained.

It may be questioned whether Prince Ferdinand's statement, that the exudate in streptococcus pleuritis inevitably becomes purulent, is not somewhat too sweeping, as Goldscheider (*Zeitschrift für klinische Medizin.*, 1892, xxi. 363) has recently reported three such cases in which the exudate remained sero-fibrinous throughout the course of the disease, at no time being purulent. There can be no doubt, however, of the correctness of Prince Ferdinand's conclusion as to the comparative severity of the streptococcus cases, and the need of earlier and more radical treatment for them.

MYOSITIS OSSIFICANS.

STONHAM (*The Lancet*, December 31, 1892, No. 1485) couples with the report of a case of this rare disease a summary of its principal features as heretofore described, giving also a very full bibliography of the published cases.

The lesion consists in the formation of dense deposits of a bony nature in

the skeletal muscles, with consequent degeneration of the muscle tissue and immobility. The process usually begins during youth and is steadily progressive. The muscles of the neck, shoulders, and back are those first affected in most cases; later, those of the chest and extremities. The body may finally be rendered quite rigid.

Heredity seems to have no part in the production of the disease, nor can any distinct etiology be formulated further than that when the disease is once fairly under way slight injury seems to determine the formation of new foci of the process. The viscera usually remain in good condition.

Death often occurs from pulmonary complication (pneumonia or tuberculosis), or from suppuration about the ossific deposits, with secondary septic absorption. Treatment is found to be useless.

POLLARD, in the same number of *The Lancet*, presents the history of a case of myositis ossificans, typical in every respect, in which he attempted to give relief by removal of portions of the bony tissue. Temporary benefit resulted, with partial restoration of motion, but this was of short duration only, fresh deposits forming at the site of operation.

TUBERCULOSIS AMONG CATTLE.

RIECK (*Vierteljahrsschrift für gerichtliche Medicin und öffentliches Sanitätswesen*, 1892, No. 4) presents the results of the examinations made at the Leipzig abattoir as regards tuberculosis during the years 1888 to 1891, inclusive. During this time 67,077 cattle were slaughtered, of which 20.4 per cent. were found to be tubercular. The increased proportion of tubercular animals during the latter part of this time is explained by the fact that the examination has latterly been much more searching. In 1891, 26 per cent. of the animals were reported as tuberculous.

[It is hardly to be supposed that the large proportion of tubercular animals observed in Leipzig obtains everywhere, but that one-quarter of those slaughtered *anywhere* in one year should be tuberculous suggests a very considerable prevalence of the disease among cattle *everywhere*, and this is verified by experience. It is much to be regretted that so little supervision of our slaughter-houses is deemed necessary. Until we systematically attack every known source of infection of tuberculosis we can hardly expect to witness much reduction of its ravages among human beings. The fact that 15 per cent. of the community are its victims, classes failure to employ every known means of prophylaxis in the category of criminal negligence.]

Note to Contributors.—All contributions intended for insertion in the Original Department of this Journal are only received with the distinct understanding that they are contributed exclusively to this Journal.

Contributions from the Continent of Europe and written in the French, German or Italian language, if on examination they are found desirable for this Journal, will be translated at its expense.

Liberal compensation is made for articles used. A limited number of reprints in pamphlet form, if desired, will be furnished to authors in lieu of compensation, provided the request for them be written on the manuscript.

All communications should be addressed to

DR. EDWARD P. DAVIS, 250 South 21st Street, Philadelphia, U. S. A.

Or

DR. HECTOR MACKENZIE, 77 Lambeth Palace Road, S. E., London, Eng.

CONTENTS.

ORIGINAL COMMUNICATIONS.

	PAGE
Cases that Should be Operated Upon by Craniectomy. By LONDON CARTER GRAY, M.D.	613
Report of a Case of Cystic Tumor of the Brain Operated Upon with Success. By LEO. STIEGLITZ, M.D., and ARPAD G. GERSTER, M.D.	620
The Disease-Process, Glaucoma. By S. O. RICHEY, M.D.	627
The Meckel Diverticulum. By D. S. LAMB, M.D.	633
Thrombosis of the Femoral Vein in Phthisis. By P. R. DODWELL, M.D. Lond, M.R.C.P. Lond.	641
Dry Aseptic Operating. By M. H. RICHARDSON, M.D., and J. G. MUMFORD, M.D.	654
Asiatic Cholera. By CHARLES A. LEALE, M.D.	659

REVIEWS.

The Anatomy and Surgical Treatment of Hernia. By Henry O. Marcy, A.M., M.D., LL.D.	669
Text-book of Nervous Diseases: being a Compendium for the Use of Students and Practitioners of Medicine. By Charles L. Dana, A.M., M.D.	671
A Manual of Bacteriology. By George M. Sternberg, M.D., U. S. Army	674
Pozzi's Gynecology. By S. Pozzi, M.D.	676
A Handbook of the Diseases of the Eye and Their Treatment. By Henry R. Swanzy, A.M., M.B., F.R.C.S.I.	678

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

	PAGE		PAGE
The Oleo-creasote of Diehl	681	New Agent in Treatment of Epilepsy	684
The Use of Chloride of Calcium in the Treatment of Pneumonia	682	Treatment of Morphinomania	685
Treatment of Pulmonary Congestion of Intestinal Origin	682	Tolypyrin	685
Note on the Administration of Dilute Nitro-hydrochloric Acid	682	Chloralamid in Insomnia of Fevers	686
Bromoform in Whooping-cough	683	Treatment of Chlorosis	686
Treatment of Ptyalism by Pyoktanin	683	Cascarine	686
Treatment of Tabes Dorsalis	683	Tropacocaine	687
		Thiuret	687
		Treatment of Diabetes Mellitus	687, 688
		Phenosalyl	688

MEDICINE.

Aberrant Tendons of the Heart	689	Intermittent Gastric Hypersecretion in an Ataxic	694
Disturbances of Sensation in Disease	690	Specific Treatment of Cholera	695
Diphtheritic Paralysis with Deafness	692	White Corpuscles in Various Diseases	696
Cretinism Treated by Hypodermatic Injection of Thyroid Extract	692	Acute Hemorrhagic Encephalitis	696
Paralysis of the Diaphragm	693	Glandular Secretions in Chronic Disease	697
Bacterium Coli Commune in Contents of a Panaris during Enteric Fever	694	Acupuncture in Primary Sciatica	698
		Visceral Tuberculosis in Leprosy	699

SURGERY.

	PAGE		PAGE
Irreducible Luxation of the Thumb	699	Subphrenic Pyo-pneumothorax	704
Temporary Typhlotomy	700	Urethroplasty in a Case of Large De-	
Spina Bifida	700	fect, and a Fistula of the Urethra	704
Tracheotomy and Intubation in 690		Intra-cranial Surgery	705
Cases of Diphtheria	701	Glue-covered Cellulose	706
Question of Primary Carcinoma of Bone 701		Later Results of Laminectomy for	
Operative Treatment of Congenital		Paraplegia due to Angular Curvature	707
Rectal and Anal Atresia	702	Operation in Trifacial Neuralgia	708
Movable Kidney	702	Joint Disease in Syringo-myelia	709
Treatment of Brain Wounds	703	Suture of the Sphincters in Operation	
Improved Technique in Bone Suturing 703		for Fistula-in-ano	709
Treatment of Hepatic Colic	704	Pathology of Lumbo-sacral Spina Bifida 709	

OTOLOGY

Contributions to Surgery of Brain,		Trepanation of the Skull and Mastoid	
based upon Otitic Cerebral Abscess 710		Apophysis after Acute Otitis Media	715
Aphasia from Otitic Cerebral Abscess 710		Abscess of Cerebellum after Otitis	716
Otitic Cerebral Abscess	711	Cerebellar Abscess, Secondary to Ear	
Cerebral Abscess from Chronic Otorrhoea 712		Disease, Treated by Trephining	716
Cases of Cerebral Abscess	713	Case of Acute Purulent Otitis Media	717
Brain-abscess from Acute Otitis Media 713		Case of So-called Bezoldt Mastoiditis	718
Cerebral Complications of Otitis	714	Extra-dural Abscesses following Otitis	720
Intra-cranial Abscesses of Otitic Origin 714		Necrosis of Both Cochleæ and Con-	
Five Cases of Otitic Brain-abscess	714	secutive Meningitis	720

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

Formanilid	721	Nasal Asthma	722
Absorption of a Laryngeal Polyp after		Cystic Hypertrophy of the Lower	
Tracheotomy	721	Turbinates	722
Asphyxia from Cervical Adeno-sarcoma 721		Morbid Growths of Septum Narium	722
Malignant Growths of the Lymphatic		Morbid Growths of the Nose	723
Glands	722	Manual Extraction of an Enormous	
Fistula of the Trachea	722	Fibrous Naso-pharyngeal Polyp	723
Neurosis	722	Retro-pharyngeal Abscess	723

OBSTETRICS.

A Case of Symphysiotomy	724	Birth Palsy, Central and Peripheral	725
Treatment of Nausea and Vomiting of		Gastric Hemorrhage during Pregnancy	725
Pregnancy	724	Ectopic Gestation	726
Puerperal Arthritis of the Sacro-iliac		Ruptured Tubal Pregnancy	727
Joint	724	The Utility of Symphysiotomy	727

GYNECOLOGY.

Sensitiveness of the Peritoneum	728	Deciduoma Malignum	729
Etiology of Vaginal Fistulæ	728	High Amputation <i>versus</i> Total Extir-	
Inguinal Hernia of the Fallopian		pation	729
Tube	728	Suturing the Ureters	730

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES.

JUNE, 1893.

CASES THAT SHOULD BE OPERATED UPON BY CRANIECTOMY.¹

BY LANDON CARTER GRAY, M.D.,
OF NEW YORK.

SOME three years ago Lannelongue proposed the operation of craniectomy for the relief of mental defects in children, since which time many operations have been done, so that I think we are now in a position to arrive at some decision regarding the propriety of this surgical procedure. Before doing so, however, it is well that we should have some clear idea of the causes of mental defect in children. These are, as I have had occasion recently to point out,² in the main:

Porencephalitis;

Meningitis and meningo-encephalitis;

Hemorrhage, either diffused or localized;

Trauma;

Hydrocephalus;

Myxoedema;

Possible premature ossification of the skull, mainly in the region of the sutures and fontanelles.

The name of porencephalitis, or porencephaly, was given by Heschl, in 1859, to certain molecular changes in the cerebrum that lead to a disappearance of tissue, this loss varying exceedingly in amount, from that sufficient to cause only a small cavity to that which might be adequate

¹ Read before the New York Neurological Society, April 4, 1893

² Article on "Cerebral Palsies of Childhood" in Keating's *Cyclopædia of the Diseases of Children*, vol. iv., and article "Cerebral Palsies of Children" in my *Treatise on Nervous and Mental Diseases*, 1892, p. 307.

for the destruction of a convolution, several convolutions, a hemisphere, or even both hemispheres. Secondly to this process is usually a certain amount of connective-tissue proliferation, which is either at the expense of the nervous parenchyma or secondary to loss of the latter. Meningitis may occur in the cerebro-spinal form, probably due to a micro-organism, or it may be of the purulent variety, or it may be idiopathic, or it may be the result of disease of the ear and its appendages, or it may occur after the febrile diseases of childhood. Any one of these forms of meningitis may also involve the encephalon, and thus become, to a certain extent, a meningo-encephalitis; but there is a special form of meningo-encephalitis of a more chronic type, which usually begins in the pia mater and extends gradually throughout the hemisphere, even to the basal ganglia, sometimes even to the spinal cord, and it is characterized by cellular infiltration and sclerosis, minute hemorrhages, and terminally atrophy, or in some rare instances hypertrophy, of the affected convolutions. Trauma often produces a meningitis, which may lead to a meningo-encephalitis, and there is reason to believe that it also occasionally causes the special form of meningo-encephalitis to which allusion has just been made. Trauma at the period of birth, incident to prolonged labor or instrumental delivery, is particularly frequent as a cause of meningitis and meningo-encephalitis, although injury after birth, in my experience, acts in this way much more frequently than is generally supposed; indeed, since my attention has been directed to this fact, I have been surprised to find the number of cases in which careful and searching inquiry elicited a history of distinct and well-marked trauma that had been entirely overlooked. Hemorrhage in the child or infant is usually the result of trauma, either at the time of birth or afterward. It must be borne in mind, too, that this hemorrhage may be either meningeal or due to rupture of bloodvessels in the region of the basal ganglia, the sub-thalamic region, and the pons, in all of which latter instances it is, because of the distribution of the bloodvessels, localized; and this localized hemorrhage frequently leads to the formation of a cyst. Hydrocephalus and myxœdema need only be mentioned. Premature ossification of the sutures and the fontanelles of the skull is the cause that has been brought into prominence lately by the operation suggested by Lannelongue, and it is therefore *sub judice*. The idea did not originate with Lannelongue by any means, because it was advocated as far back as 1851 by Virchow in his memoir upon Cretinism, and it has been under discussion since in the various writings upon the subject of idiocy by Pozzi, Vogt, Baillarger, Broca, Vrolik, Parchappe, and Gudden. It is impossible to obtain, in this country at least, a sufficient number of skulls of idiots whose histories have been carefully recorded, to pass upon any question of this kind by the examinations. I have examined a number myself, but have been baffled by the lack of

proper clinical records. Tacquet¹ has recently written an interesting and timely monograph upon this subject, none the less valuable, perhaps, because I shall be forced to traverse all his conclusions. He has examined twenty-nine skulls of idiots, and believes, as a result of this investigation, that obliteration of the sutures of the cranium is not more premature in idiots than in healthy individuals; so that the arrest of cerebral development was in none of his cases the result of an arrest of development of the skull, and not one of them warranted the operation of craniectomy. Indeed, he goes further and states that far superior to the surgical treatment of these cases would be the *medico pedagogical treatment*, as he learnedly terms it, such as is applied at the Bicêtre. When we come to examine his cases critically, however, I think you will agree with me that his conclusions are entirely unwarrantable. He has adopted the classification of idiots proposed by Bourneville, namely:

1. Idiocy from myxœdema;
2. Microcephalus;
3. Porencephaly;
4. From arrest of development of cerebral convolutions;
5. From hypertrophic tuberos sclerotic;
6. From atrophic sclerosis;
7. From meningitis or meningo-encephalitis.

Manifestly, this classification is absurd, because when a child has myxœdema, atrophic sclerosis, meningitis, meningo-encephalitis, hypertrophic tuberos sclerosis, porencephaly, or marked disease of the cerebral convolutions, these are the causes of his arrest of cerebral development and also of the arrest of skull-development. I am entirely at a loss to understand how it could be for one moment supposed that the examination of the skulls of these idiots could throw any light upon the question as to whether primary ossification of the sutures and fontanelles arrested the development of the cerebrum. We must, therefore, throw out all such cases as these of Tacquet's. If, however, we examine other of these cases in which no primary disease in the cerebrum was demonstrated, we find that his conclusions are directly contradicted by his own observations. Thus, Case XVIII., aged seventeen months, was one, it is said, simply of idiocy and difficult deglutition, and in this the thickness of the different cranial bones varied from two to four millimeters, there was no trace of a fontanelle, and the sagittal suture was prematurely ossified to a slight degree at the point of insertion of the temporal muscles. In Case XX., aged two and a half years, in which the first symptoms of idiocy are said to have commenced at six months, the patient was unable to stand, and had great vertigo and continuous movements of the left arm, the bones of the skull were very thin, the sagittal

¹ Obliteration des Sutures du Crâne chez les Idiots. Paris, 1892.

suture had begun to ossify along the internal table, both coronal sutures were ossified through half their course, and the lambdoid suture was ossified along the internal table. In Case XXI., aged five years, the child was born at the sixth month, convulsions began in the sixth week, and it could not stand or walk. The skull was large and asymmetrical, the fronto-parietal region slightly flattened on the right side, and the posterior fontanelle was replaced by a Wormian bone. Now, it so happens that Welcker has shown that a local synostosis, well limited, is a pathognomonic sign of premature ossification, Pommerol has made it clear that normal synostosis begins between the fortieth and fiftieth years, and Sappey states that complete obliteration of the sutures does not take place until between the eightieth and ninety-fifth years. Ribbes has examined 2200 crania, and, as a result of this, concludes that the ossification of the internal table appears in the higher races between forty and forty-five years, the minimum being at the twentieth, and the maximum at the fifty-fifth year; whereas in the inferior races the sutures commence to ossify between the twenty-fifth and the twenty-eighth years. But these dates do not apply to the medio-frontal and the spheno-occipital, which close before the others. I think, therefore, that you will agree with me that Tacquet's conclusions are not supported by his cases—nay, even more, that two of his cases directly contradict his conclusions, and tend to prove that premature ossification may be a cause of arrest of cerebral development.

Of all these causes of idiocy, only, the premature ossification of the sutures and fontanelles, recent traumatic injuries, and hemorrhages can possibly be benefited by a craniectomy, for porencephaly, meningitis, meningo-encephalitis, and myxœdema are lesions that the surgeon's knife cannot in any way affect. The important question immediately arises: Can we make a diagnosis of these lesions causative of idiocy? I think that we can, in a general way, in the larger proportion of cases presented to us. Thus, we can certainly diagnose a traumatic lesion if we obtain the history of the trauma, either during parturition (from prolonged labor or an instrumental delivery) or afterward. Hemorrhage, whether diffused or localized, is generally the result of trauma, so that if we get any evidence of organic lesion following a trauma, we would be warranted in making a diagnosis of hemorrhage. Meningitis can usually be diagnosed, either of traumatic, epidemic, or endemic causation. An analysis of the various causes of porencephalus collected by Andry in 1888, demonstrates that porencephalus is apt to occur in either foetal life or in the first few years after birth, and that it is not usually attended by much reflex disturbance; so that by the latter fact it would be distinguished from meningitis or hemorrhage. Myxœdema, of course, is readily diagnosed. So-called tuberous hypertrophy is non-diagnosable, but fortunately it is a rare disease. Meningo-encephalitis of the

subacute and chronic type is also non-diagnosable, but it is rare, and it gives rise in the early period to marked signs of cerebral disturbance. If, then, in any case of idiocy we can obtain a reliable history from some one who has been with the child since birth, best of all its own mother, and we can positively exclude trauma, meningitis, hemorrhage, and myxœdema, we shall then have only to deal with so-called tuberous hypertrophy, porencephalus, and premature ossification of the sutures and fontanelles. Tuberous hypertrophy is so rare as to be practically of no account. Porencephalus, as I have said, occurs generally in foetal or early infantile life, and will, in a vast majority of cases, cause some paralysis of motion or sensation. Of these causes, porencephalus, meningitis, hemorrhage, trauma, and tuberous hypertrophy are very likely to cause some organic destruction of the cerebrum or cerebellum, and this must manifest itself by mutism, blindness, motor paralysis, localized convulsions, or contracture of a single limb or of both an upper and lower limb on the same side. If, in an idiot child, we can exclude these symptoms, it seems to me quite reasonable to make a diagnosis of a premature ossification of the sutures and fontanelles as causative of the mental condition. I am quite willing to believe that the pressure of a non expanding skull upon a cerebrum expansile with developmental tendencies is quite sufficient to cause such symptoms of cerebral irritation as strabismus, generalized convulsions, inability to walk, contractures, violent temper, involuntary micturition and defecation, and various unclassifiable generalized muscular movements. This is precisely the point which has not been tested as yet by the operations that have been done.

Five cases have come under my observation in which there were none of the symptoms, according to my belief just outlined, of organic disease of the cerebrum. One of these cases was seen through the courtesy of my friend Dr. Charles L. Dana, who did me the honor of asking my advice as to the advisability of the operation. He will report upon it at this meeting, and I will therefore content myself with stating that the improvement is said to have been marked. Three of the other cases I am not prepared to report as yet, because they were all done within the last thirteen months, and although they have steadily improved, according to the statements of the parents, I have not seen them myself, nor have they been examined by any physician. One other case was operated upon in December, and I do not think that time enough has yet elapsed to enable me to speak positively of the results, although so far they have been very marked. The case which was reported by Dr. John A. Wyeth¹ was also examined by me. There was no evidence whatsoever of organic cerebral disease, and the child, aged fifteen months,

¹ New York Medical Record, February 21, 1891.

was idiotic, cried incessantly, made no attempts to walk and talk, and had the usual cross-legged attitude, with contracture of the lower extremities, without any actual paralysis. In January, 1891, Dr. Wyeth did a craniectomy. On October 20th last, about twenty-two months after the operation, the mother writes to Dr. Thomas S. Galbraith, of Seymour, Ind., to this effect: "At the time my baby was placed under Dr. Wyeth's care he was a constant sufferer. He was not attracted by anything that went on about him, and we were unable in any way to gain his attention. Now he is bright and happy, walking and talking. He is just like other children, only his improvement has been very slow. Dr. Wyeth has changed our affliction into a blessing, for which we are very grateful."¹

If to these we add the cases reported by Dr. Roswell Park,² of Buffalo, we can all admit, I think, that there is a justification for this operation if done upon the class of cases which I have indicated.

I do not think that we should confine ourselves to looking for premature ossification of the sutures and fontanelles. In the case which Dr. Wyeth operated upon last December, to which I have already alluded, the frontal bone on one side was found to be an inch thick, and a subsequent operation some eight weeks afterward showed, so Dr. Wyeth informs me, that the frontal bone upon the opposite side was equally dense. Only last week Dr. Wyeth referred to me for my opinion a child with the following history:

H. E., aged four years, one of seven children; no neurotic history; birth normal in every way. When five months old the infant suddenly began to have so-called "fine spasms," not severe enough, in the mother's phraseology, to be called convulsions. Had several of these each day until a year ago, since when they have only been occasional twitches at night. Is very restless, and apparently of low intellectual development. The mother thought the child was blind, and an ophthalmic examination demonstrated an atrophy of both optic nerves. The reflexes to light were excellent, however, and the child followed the flame of a candle with its eyes except so far as it was prevented by a paresis of the right external rectus and the right inferior oblique. The limbs are not spastic. There is no control over the bladder or bowels. The plantar reflexes on both sides are exaggerated; the knee-jerks are present, but the right one is slightly spastic. It has never talked or walked; has the usual cross-legged attitude, but there is no contracture. Uses the hands very well. The mother thought that he was deaf, but careful examination showed that he hears sounds through the air. This child was operated upon a few days ago by Dr. Wyeth, who removed a large portion of the occipital bone, which he found over an inch in thickness. Of course, it is too soon as yet to speak of any result, but the child certainly seems brighter.

¹ Indiana Medical Journal, November, 1892.

² Medical News, December 10, 1892.

Another fact that has been overlooked must be taken into consideration in doing this operation of craniectomy—namely, that an infantile brain arrested in development from any cause must necessarily, even when the cause is removed, develop more slowly than a normal cerebrum. Most of the histories as yet have been defective in the fact that the report has been made too soon after the operation. None of these cases can prove anything until a year or two has elapsed, and even then we must be on our guard—on the one hand, against the enthusiasm of parents, and, on the other hand, against the skepticism of physicians not trained in the observation of mental symptoms. I have recently had a notable illustration of the necessity of care in this respect. Last October I had a boy of fifteen brought to me who is said to have been perfectly well until he was eight years old, when he manifested symptoms of cerebral lesion, of which I can only get an indistinct history from the mother, but which seem to have consisted of wakefulness, causeless outbreaks of temper, one slight convulsion, the exact limitation of which is not known, and absolute disappearance of articulate speech. When this boy was brought to me he had absolutely no motor or sensory paralysis, no changes in the retina, no paralysis of the tongue, and no deafness. His skull was fairly developed for a boy of his age, and his face was fairly intelligent except that he had a slight air of bewilderment. He could not speak an articulate word. He was very shy, but would do whatever he was told if the command was repeated several times, and did not make necessary too complicated a series of actions. Thus, he would go to any portion of my office and pick up a book, or open the door, or go around the room once or twice, etc. I made a diagnosis of a lesion, the exact nature of which I did not venture to define, although deeming it probably to be of hemorrhagic origin, located in the third frontal convolution or its underlying white matter, upon the left side. He was operated upon last November by Dr. George R. Fowler, of Brooklyn. The left frontal convolution was found to be soft, pultaceous, and very much diminished in size, and an inch beneath it was detected a cyst the size of a marrow-pea. Unfortunately, this was ruptured in the attempt to remove it, and there gushed forth about half a drachm of clear serous fluid. The cyst walls were not removed. This boy has done excellently well. He has commenced to frame sentences in a childish way; he can pick out objects in a picture-book and name them with a drawling speech; his shyness has, in a large measure, disappeared; he comes into my office and shakes hands with me on entering and leaving; he sits quietly in a chair when told, and his countenance is decidedly more intelligent. Now, I do not think that I am an enthusiast about this matter, and yet I am positive as to the improvement in this boy's case. Yet the mother, to this day, cannot believe that her child has improved in any notable way, and this is simply because she

is not a woman of much intelligence, is poor and very anxious, and is not fitted by her training to detect shades of difference in mentality. In the last two weeks this boy has again become very restless, and has had several violent outbreaks of temper; and, as the wound is bulging and gaping, I propose to have Dr. Fowler in a few days cut down upon it and ascertain whether there is a hernia cerebri, which I very much doubt, or whether the cerebrum is really expanding, which latter seems to be the most probable supposition, as the boy's intelligence has in no way been diminished by these latter symptoms.

REPORT OF A CASE OF CYSTIC TUMOR OF THE BRAIN OPERATED UPON WITH SUCCESS.¹

BY LEO. STIEGLITZ, M.D.,

PHYSICIAN TO THE NEUROLOGICAL DEPARTMENT OF THE MOUNT SINAI HOSPITAL DISPENSARY;
INSTRUCTOR IN NEUROLOGY IN THE NEW YORK POLYCLINIC,

AND

ARPAD G. GERSTER, M.D.,

ATTENDING SURGEON TO THE MOUNT SINAI HOSPITAL AND THE GERMAN HOSPITAL;
PROFESSOR OF SURGERY IN THE NEW YORK POLYCLINIC, ETC.

It cannot be denied that the progress made in the treatment of the graver lesions of the nervous system has not kept pace with the brilliant advances made in the study of their pathology and nosology. Every neurologist has had occasion to deplore the futility of his efforts in attempting even to stay the progress of most of the organic diseases of the central nervous system, unless, fortunately for the patient and for the physician, they happen to be of a specific origin. It is not surprising, therefore, that modern cerebral surgery, which enables us, under favorable circumstances, to attack so grave and frequently fatal a lesion as a tumor of the brain with success, is meeting with universal interest and widespread discussion. The case I am able to present to you in company with Dr. Gerster, offers no new features of importance, but is of sufficient general interest, I trust, to warrant the following detailed history of the case:

The patient, aged twenty-five years, was married in April, 1891; previous to her marriage she had always been well; there is no hereditary taint of any kind, and no history of traumatism or convulsions prior to her present trouble. The latter began in October, 1891, without any premonitory symptoms whatsoever; while sitting, talking quietly with her husband the patient suddenly felt the thumb and forefinger of her right hand twitch violently; the convulsive twitchings spread

¹ Read before the Neurological Society, January 3, 1893.

rapidly up the forearm and upper arm to the shoulder and face, leading finally, within the space of a few moments, to a general seizure with loss of consciousness, cyanotic discoloration of the face, frothing at the mouth, and tonic and clonic convulsions.

A second spell, similar in character, occurred seven weeks later; a third, two weeks thereafter, early in December. On December 22d the patient had three spells, one of them with involuntary micturition. On December 23d, patient consulted Dr. Henry Heiman at the Mt. Sinai Hospital Dispensary; as his assistant, I saw her for the first time, too. Suspicion of a localized cerebral lesion was immediately aroused; but as she offered absolutely no further symptoms, had not a trace of headache, nausea, giddiness, choked disk, etc., she was put upon bromides and kept under observation. She had spells on January 5th and 13th, three on January 15th, and one on January 19th, *after which she had no more general convulsions at all*; convulsive twitchings, confined to the right hand and forearm and always beginning in the thumb and forefinger, occurred, however, almost daily.

Though a thorough examination of the patient and her husband revealed no signs of a suspicious character, she was subjected during the latter part of January to inunctions of 4 grammes of mercurial ointment a day, taking 3-5 grammes of the iodide of potash at the same time internally. No improvement was noticeable under this treatment.

In February, a marked paresis of the right hand developed; the patient could perform all movements, but with less strength than before. The paresis increased slowly during the next few weeks. In April, Dr. Heiman presented her before the New York Society of German Physicians as a case of cortical epilepsy, a diagnosis in which the physicians present concurred.

On May 1st, patient came under my treatment; she was examined repeatedly from head to toe; the abdominal and thoracic viscera were perfectly normal. There never was any trace of albumin or sugar in the urine. There were no glandular swellings, nowhere any traces of specific disease. There was no sensitive area on any part of the head. Dr. Koller examined the optic disks a number of times and could find no morbid condition. The deep reflexes were very lively on both sides, especially so, however, on the right side. There was very marked paresis of the muscles of the right hand and wrist, less so of the flexors of the elbow-joint. The dynamometer test showed 25 on the right, 55 on the left side. Patient complained of no headache, no nausea, no drowsiness, no impairment of the memory, etc. Convulsive twitchings in her right hand and arm occurred almost daily, as a rule, early in the morning. During a visit at the Dispensary, patient had a localized seizure; there was a powerful contracture of both the flexors and extensors of the fingers and wrist, the contracture in the flexors predominating, so as to produce a "*main en griffe*;" the contracture was so powerful that it was almost impossible to straighten the fingers. While under my care patient was put first upon large doses of the iodides of sodium and potash rapidly increased to 20 grammes a day, as I wished to exclude all possibility of a specific lesion before subjecting her to surgical interference. Under the iodides there was decided improvement; the twitchings occurred less frequently and were less violent in character, so that the conviction was being forced upon my mind that the lesion was specific after all. The improvement, however, was but temporary. In June the convul-

sive movements recurred with increased violence, spreading as far up as the shoulder; the patient noticed that after every convulsion her hand was weaker than before. All this time absolutely no general symptoms developed. The right median and ulnar nerves responded somewhat earlier to the faradic current than the same nerves of the left side. There never were any disturbances of sensation in any part of the hand or arm, if we except a general feeling of numbness the patient experienced in the whole arm.

In arriving at a diagnosis in the case, two points were to be considered: the location of the lesion and its character. The centre for the movements of the right thumb and forefinger is situated in the left anterior central convolution at the conjunction of the lower and middle thirds¹—that was the place the lesion had to be looked for. As to the character of the lesion there were but few symptoms present to base a diagnosis upon, but those present were so distinct, that pretty safe conclusions could be drawn from them: we had primarily symptoms of local cortical irritation, *i. e.*, local and general convulsions; these were followed in the course of time by a gradual, but very marked, loss of power in the group of muscles primarily affected by the cortical irritation; this succession of symptoms left no doubt as to the presence of an organic lesion of a progressive and destructive character at the location described above. An organic lesion of such a character must be a growth of some kind, or an abscess. There was no history nor any sign of any injury to the head, no purulent ear trouble, no purulent focus at any part of the body, which might have given rise to an abscess of the brain; there was no headache, no part of the skull was ever sensitive to tapping, and there were no fluctuations of the temperature—in short, there was nothing to favor the diagnosis of an abscess. It is true many cardinal symptoms of a tumor were absent as well, but that merely implied the absence of pressure upon the brain and did not preclude the presence of a tumor. The diagnosis arrived at, therefore, was: organic lesion, probably a tumor, situated in the left anterior central convolution.

The patient and her husband consenting, I proposed an operation to Dr. Gerster, who willingly undertook to perform it. On June 23d, Dr. Sachs kindly examined the patient and, concurring in the diagnosis made, also strongly recommended the operation.

The operation was performed on June 25th, at the Mt. Sinai Hospital. The head having been shaven, Dr. Sachs made the proper measurements and marked out the position of the arm centre. A liberal opening in the skull having been made, the dura was seen to bulge but slightly into it. An area in the dura of the size of half a dollar, showing a diffuse yellowish tinge differing from the surrounding healthy pale blue of the dura, immediately struck the eye. Applying the poles of a small faradic battery to the *unopened* dura, Dr. Sachs determined easily and promptly

¹ Horsley: Brit. Med. Journal, 1886.

the centre for the movements of the hand and fingers; the place corresponded with the discolored area just described. The dura having been opened by a crucial incision, the cortex of the brain offered no apparent changes. A vertical puncture into the substance of the brain was followed by a gush of yellow serous fluid, none of which, unfortunately, was saved. I should say almost an ounce of fluid escaped. Dr. Gerster introduced his little finger into the cyst for about one and a half inches and found its walls perfectly smooth. At the suggestion of Dr. Sachs, a small layer of gray matter was removed from the centre exposed, to prevent disturbances which might develop from possible secondary sclerotic changes in it. There was little shock after the operation and no rise of temperature occurred during the healing of the wound. The day after the operation the patient had lost all power in her right thumb and forefinger, and could move the rest of her entire right arm but very slightly.

June 27. Patient can just move her thumb and forefinger; sensation on dorsal aspect of the two proximal phalanges of all fingers but the thumb lost; palmar aspect normal.

July 11. Slow improvement in motor power of right hand and arm; patient can move her fingers well, but without strength; sensation of numbness in four ulnar fingers.

14th and 15th. Vertigo.

16th. Menstruated.

21st. *Slight convulsive twitchings* for from two to three minutes in right hand, arm, and face.

28th. More violent twitchings.

August 7. Scalp wound opened; adhesions found between the flap of skin and the dura; probing revealed no recurrence of fluid in the cyst. The adhesions between the scalp and dura having been separated, a flexible gold plate was inserted between the two to prevent any recurrence of adhesions and to serve as a protection to the brain, the plate projecting slightly beneath the ledges of the opening in the skull.

9th. Slight twitchings in three ulnar fingers. The patient can move her fingers, hand, and arm quite extensively now; slight ataxy is noticeable when she is subjected to the usual tests.

16th-26th, Sept. 16, Oct. 17 and 27. Slight twitchings in her fingers. Upon examination in November it was found that the patient had lost the sense of position in the fourth and fifth fingers; she cannot tell whether they are flexed or extended. The muscular sense in the rest of her hand is also slightly impaired. In strength her hand and arm are greatly improved; she can write, sew, and do light housework.

Dec. 10. Considerable twitching in right arm and side of face, lasting from two to three minutes; since then the hand is slightly weaker.

It must be added, that the patient has been kept on from fifteen to thirty grains of bromide of potash a day since the operation.

The most noticeable feature in the case was the absolute absence of general cerebral symptoms; at no time was there any headache, any vertigo, any indication of papillitis, etc. The absence of these symptoms is easily understood, when we remember that the dura mater bulged but little upon exposure, which indicated the absence of any undue pressure within the skull.

Interesting and worthy of note was the promptitude with which the

cortical centres responded to the faradic current applied to the *unopened* dura.

It was unfortunate that none of the serous fluid evacuated was saved ; its chemical and microscopical examination might have furnished a clue as to the anatomical character of the cyst. Three types of cystic tumors are met with in the brain :

1. Cysts formed after a hemorrhage, or after the occlusion by embolism or thrombosis of a terminal artery. This type must be considered rather in the character of a scar than a tumor.

2. The second type includes the cysticercus and echinococcus, which are not infrequently found in the brain, especially in foreign countries. Lewin, in Berlin, having reported cases in which the diagnosis of cysticercus in the brain could be made by finding a number of the parasites under the skin, careful search was made in our case for the small, rather hard subcutaneous nodules, but without success.

3. The third type includes cysts formed either within or on the basis of a new-growth, most frequently a glioma or sarco-glioma. Williamson,¹ in a recent paper, calls attention to the fact that a very careful microscopical examination of the walls of the so-called serous cysts of the brain often reveals the presence of minute particles of the original tumor, generally a glioma, from which the cyst is derived. In this respect, three cases recently published by Erb² are of interest. The first is a case of tumor of the brain operated upon by Czerny three times within as many years. I was present at the first operation, in November, 1890. A very vascular, spongy glio-sarcoma of the size of an apricot was removed from the motor area ; no cysts were present. At the second operation, a year later, a large cyst, containing about an ounce of fluid, and a smaller cyst were found in the recurrent tumor. The second case was a glioma containing a number of cysts ; the third, a glioma with a cyst as large as an orange.

In a case resembling ours somewhat, reported by Oppenheim and Köhler,³ a large cyst being found and removed, the microscopical examination of its walls revealed the presence of a glioma.

These considerations have inclined me to believe that in our case, too, a glioma is at the bottom of the trouble. If that is the case, there is reason to fear a further growth of the neoplasm presumably left in the walls of the evacuated cyst ; and I regret to add, that since the announcement of this paper symptoms have developed which seem to confirm these fears. Early in the night, from December 22d to 23d, while lying quietly in bed, the patient was suddenly seized with violent con-

¹ Williamson : THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 1892.

² Erb : Deutsche Zeitschrift für Nervenheilkunde, Bd. ii. p. 414.

³ Oppenheim and Köhler : Berliner klin. Wochenschrift, July 28, 1890.

vulsive twitchings in the right arm, which spread rapidly to the shoulder and to the right side of the face, ending in a general convulsion with loss of consciousness. The patient, who is quite intelligent, says the twitchings, before she lost consciousness, were most violent in the facial muscles. There is no sign of paresis noticeable in the latter, but the hand and arm have lost some of their regained power.

As to the further treatment of the patient, the removal of the entire cyst or its remains is certainly desirable; whether it is practicable the surgeon will have to decide.

REMARKS BY DR. GERSTER.

Craniotomies having become of very frequent occurrence, it will be worth our while to dwell upon some points of surgical technique. One of the most important justifications of the frequent exploratory and other invasions of the cranium is the safety with which modern surgery has surrounded these operations. This safety depends upon several conditions, the foremost of which is an absolute cleanliness or asepticism. As regards the scalp, a surgically satisfactory condition of it can be reached only by a complete shaving and the wet pack applied for a few—if possible, twenty-four—hours before the operation, a thorough scrubbing with brush and soap to immediately precede the operation.

The scalp-wound is a source of danger and embarrassment, and methods have shifted regarding its treatment. The old crucial incision has been abandoned, and flap incisions of generous proportions have been substituted, the apex of the flap being situated so that its shape will aid drainage in the recumbent posture of the head.

Even if the operation be performed with the patient in a semi-recumbent or sitting posture, the hemorrhage, if unchecked, is very considerable, and in children may even be fatal. The safest rule is to clamp the entire margin of the incision, and to remove these clamps only and gradually preceding each occluding suture. Clamps of T-shape, embracing one and a half to two inches of the incision, are very convenient. The bruising of the tissues caused by these clamps is considerable, but has never interfered yet with primary union.

Following the example of the German and Scotch surgeons, I give the gouge and mallet the preference over the time-honored trephine. It has been objected that shock might be produced by the many successive blows of the mallet; experience, however, does not verify this theoretical objection. The only instance of fatal shock following a linear craniotomy of an idiotic child observed by me was undoubtedly due to excessive hemorrhage. Corresponding to the area to be exposed, the outer table is rapidly removed, the work of the chisel becoming easier as it penetrates the diploë, till finally the inner table is exposed, being easily

recognized by its snowy whiteness. Every stroke of the mallet is done under the guidance of the eye, and accidental injuries to the meninges are impossible. As soon as enough of the inner table has been gouged away to admit the beak of a rongeur forceps, the mallet and chisel are put away and the cranial aperture is enlarged by successive nippings with the rongeur. Care must be taken not to take too big a bite, as it will lead to fracture of the rongeur. If the skull is very thick, the way should always be prepared for the rongeur with the gouge and mallet, with which the outer table and diploë should be first removed. Occasionally diploëtic vessels will bleed quite profusely. Better than the use of plugs of wax, pith, or catgut, is the following expedient: The point of a narrow bistoury or tenotomy knife, or of a small drill, is inserted into the bleeding orifice, and is driven into it with the motion of a gimlet, one-half or a whole rotation being sufficient to detach the vessel from the walls of its bony canal, and to cause its retraction.

As soon as the dura mater is exposed the accuracy of the determination of the exposed area is tested in the well-known manner. In the many instances in which I have employed the electrodes for verification to the intact dura mater, I do not remember one in which this test did not promptly succeed.

According to the exigencies of the case the cranial gap can be extended in any shape and direction, the liberty of action thus afforded by the gouge and mallet being one of their greatest advantages. Before opening the dura, probatory punctures may be made with safety, to guide further steps. The presence of a cyst filled with pus, serum, or blood will be thus detected, and tumors of a consistency greater than that of the brain will be recognized by the greater resistance they offer to the instrument. Whether the incision through the dura should be crucial or flap-shaped will have to be determined separately in each case; the knife should divide the membrane between two mouse-toothed forceps, to avoid injury to the vessels of the pia. Palpation and inspection of the exposed brain will inform us about the state of its pulsation, color, and consistency. Should it be determined to incise the brain, the vessels traversing its surface should be spared, if possible; if this cannot be, they should be doubly deligated with fine catgut passed under them with a curved needle, the incision going through the space embraced by the ligatures. Should vessels contained within the brain be cut or injured, attempts at grasping and tying them will be futile, and our reliance must be placed upon iodoform-gauze tampons, aided by moderate pressure, which will check hemorrhage with absolute certainty.

Abscesses and cysts will be drained by the insertion of rubber tubing, which is to be carried out through a button-hole in the flap of the scalp. Attempts at the removal of the lining membrane of cysts or abscesses will usually fail and may lead to serious injury of the brain-substance.

The removal of tumors will have to vary according to their nature ; if encapsulated, their enucleation by the point of the finger or a blunt instrument will be easy. Infiltrating neoplasms should not be meddled with ; caseous or granulating deposits of a tubercular or syphilitic nature will admit of the safe use of a curette, by which such of their portions should be scooped away as will readily yield. Hemorrhage from these cavities will be checked by iodoform-gauze pressure. Should hemorrhage recur after the withdrawal of these packings, preceding the insertion of a drainage-tube in cases of syphilis or tuberculosis, it will be found necessary and safe to reinsert an iodoform-gauze tampon, leaving it in the cavity to serve both as a plug and a means of drainage, such a tampon to be treated exactly like a drainage-tube ; twice or three times within twenty-four hours it can be safely removed.

When it is desired to remove the cortex belonging to certain motor areas in cases of epilepsy, the extent of the excision being determined, the area is outlined by a vertical incision carried through the cortex into the white substance ; then a knife bent on the flat is used to remove neatly and completely all of the gray substance included in this area. Hemorrhage is checked by iodoform-gauze pressure.

When the operation is completed the dura mater should be reunited by catgut suture ; the external wound and flap are then cleansed of clots and the scalp-wound is sutured, the hæmostatic clamps being taken off successively as the suture progresses. It is advisable not to apply too many or too tight sutures, as the interstices left in a loose series of stitches will serve for drainage. The scalp-wound is dusted with iodoform powder ; drainage-tubes are transfixed with a pin close to their emergence, and are trimmed off short ; a strip of rubber protective is placed upon the line of section and a generous moist dressing of loose gauze and gauze compresses is held down snugly by a mitre-bandage, which is fortified by a few turns of a starched bandage.

THE DISEASE-PROCESS, GLAUCOMA.

BY S. O. RICHEY, M.D.,
OF WASHINGTON, D. C.

A FAIR hypothesis must be based upon all the known facts of a case, and must rationally explain them all.

"Scleritis¹ is more often met with in persons of a rheumatic, or gouty, habit than in others." Garrod² has seen two cases of scleritis with

¹ Soelberg : Wells, Dis. of the Eye, Bull's ed., p. 273.

² Reynolds : System of Med., vol. i., p. 517.

white deposits of urate of soda on the surface of the tissue; "likewise on the tarsal cartilage at the angles of the eyes." Increased tension is constantly a symptom in scleral metamorphoses. "During life the existence of scleritis is often overlooked, or is first recognized by its results, staphyloma or atrophy."¹ A chronic hypertrophic condition of the sclerotic *always* precedes total phthisis of an eyeball, and the process leading to it begins, without exception, in the posterior parts of the sclerotic around the entrance of the optic nerve, and progresses more and more toward the corneo-scleral margin.² Coccius³ saw one case of fatty degeneration of the sclerotic in glaucoma, and Cusco and Coccius suggest that the starting-point of glaucoma is an inflammation of the sclerotic. *Lime* deposits in the sclerotic at this period of life might easily be mistaken for fatty degeneration—the presence of fat globules in the tissue would be essential to its proof. The effect of fatty degeneration of the sclerotic would be its friability and diminished resistance to intra-ocular pressure, with subsequent *lowered* tension. The occurrence of this condition in a very limited number of cases is possible, for any phase in this "combination of diseases" is conceivable. In nearly all cases of glaucoma, however, a state of increased rigidity of the sclera is a marked characteristic; high tension and increased rigidity of the sclerotic, to some extent, mask each other.

The sense of the discussion upon this malady at the Heidelberg Congress, in 1877, is that the apparent teachings of dissections are inconclusive. "Anatomical observations in explanation of this array of symptoms serve little purpose," and yet each one of "this array of symptoms" is an evidence of morbid change in some of the ocular structures.⁴ The presence of *all* the symptoms, or of the most characteristic of the observable structure changes, are not essential at any given stage, and all cases do not run the same unvaried course; but, taking the *whole* history of two cases to their conclusion, and usually the distinguishing symptoms *have* been present, and the result is much the same. If the varying symptoms, the different diseases which are included in the name, the natural explanation of the symptoms, and the theory of their causation can be made consistent with each other, and can be shown to be due to a common cause, the fog surrounding this question will be somewhat thinned.

The accumulated testimony of all observers, interpreted, points to morbid changes in the connective, or fibrous, tissues as the initial and permanently progressive lesion of the disease, indicating that these changes are interstitial, beginning in the sclera; that they consist in

¹ Stellwag: Dis. of the Eye. Am. ed., 1873, p. 336.

² Alt: Lectures on the Human Eye, 1880, p. 45.

³ Archiv f. Augenheilk., B. ix., 1, p. 21.

⁴ Alt., p. 155.

connective-tissue proliferation, with its usual debasing effect upon the higher functional forms of tissue enclosed by the sclera, which, by their protests against this inexorable degradation, give rise to the subjective symptoms present—the objective symptoms are phases of the progress of the disease.

By a histological consideration of the globe, one is impressed with the amount of connective tissue in its construction and its importance to the integrity of the eye, for this organ is *composed* of fibrous and connective tissue, an elaborate and pervading framework and support to vitally functional tissues, surrounding every structure. Because of its low vitality and consequent indisposition to resentment, it rarely (about 1 per cent. of all cases) acts viciously, and then we must look for a persistent cause of irritation, of low grade, with a tendency to reversion along the lines of evolution. In the inadequacy of the liver to convert uric acid into urea we have such a tendency; in the presence of uric acid in the blood and tissues we have such a cause. When a disease is bilateral it cannot be purely local in its origin; in the consideration of causes persistent irritation is an essential quality, and acute inflammatory action results when the irritation is increased. Uric acid is carried by the blood, and the envelope of an organ receives its first effect; hence, it has been observed that the sclerotic is denser and harder than normal before any other evidence is in existence of the presence of the dread disease, and as this occurs at a period of life when such condition, to some extent, is supposed to be natural, it is liable to attract little attention.

The morbid process, to my mind, is a *hyperplasia of connective tissue which diffuses itself through the whole organ*, possessing the property of pathological connective tissue to always *contract*. High arterial tension promotes the formation of new connective tissue, is present early in glaucoma, and is the conservative effort of Nature to relieve the blood of uric acid. This product acting mildly for a long time, will usually cause connective-tissue proliferation; if the action be intense or if the urate of soda is formed in this region, the vascular apparatus chiefly is affected and violent inflammatory action results. In this we find the difference between chronic and acute glaucoma. The slow, insidious progress of simple glaucoma is a point in favor of this view, as all forms of glaucoma, including the hemorrhagic, are the outcome of connective-tissue growth, varying in degree of acuteness, or in the active functional tissue first invaded; it may be that the coats of the bloodvessels are first involved, or that there is a binding of nerve fibres by the encroachment of the connective tissue surrounding them, or that there is thickening of the stroma of the choroid, or retina, or even of the inner layer of the sclerotic, which last would, to some extent, shorten the

antero-posterior diameter of the eyeball interiorly, producing increasing¹ hypermetropia.

In interstitial nephritis from the same cause, we have an analogue to the condition called glaucoma, with similar constitutional disturbances, and a like morbid process of the cortex and parenchyma. It is of low grade, insidious, and is often unmarked by positive symptoms until the beginning of the end; it always attacks both kidneys, though not usually at the same time, and therefore the disease is seldom at the same stage of progress in both; the progress of the malady has its interruptions and exacerbations, or it may be lighted into more acute action; after each exacerbation the disease is more advanced; step by step, the history of simple glaucoma.

Hyperplasia of the connective tissues offers an unforced explanation of all the sympathetic and anatomical phenomena of glaucoma: the so-called prodromata—impaired accommodation, premature presbyopia, increasing hypermetropia, halo, fogginess of vision, and heaviness of the brow; the local symptoms of an attack—increased intra-ocular tension, circumorbital pain, peri-corneal injection, protrusion of the globe, sluggish dilated iris, anæsthetic cornea, lachrymation, photophobia; the anatomical peculiarities—excavation of the disk, obstruction of the channels of filtration, the white ring of the papilla; the complications—coloboma iridis, total aniridia, nephritic retinitis, detached retina, high degrees of staphyloma posticum (with reduced tension). Wells² is my authority for the statement that Donders claimed inflammation to be not an integral part of glaucoma, but an unessential complication.

The constitutional disturbances are due to the constitutional cause of the interstitial process.

In fulminating glaucoma the irritation has been sudden and violent in its action (possibly urate of soda); in the hemorrhagic form the walls of the bloodvessels have first been affected and rendered brittle; in the chronic, irritable form the irritant has been mildly persistent, with periodical accessions of intensity. All are forms of one process, due to

¹ Within the past few years, I have seen two cases of primary glaucoma in women (aged fifty-three and seventy-one years), in which, without any observable change in the anterior section of the eyeball, *myopia* has developed and increased precisely as in the progressive myopia of early life. The individuals read more comfortably without convex lenses, and require concave lenses for distance. There is excavation and increased intra-ocular tension in both eyes in both cases, the two eyes of each person being different in depth of excavation and the degree of myopia. The vitreous appears to have receded instead of being advanced, and the eyeball is distended posteriorly, as in staphyloma posticum. Choroidal atrophy has not yet appeared:—3 D' on the worse eye gives V. = 20/xx.

If any operation would serve here, it must be *posterior sclerotomy*, in which event the same operation would serve in staphyloma posticum.

These cases may be the exceptions which prove the rule.

² Wells, *vid. sup.*, p. 583.

one cause, unless the disease is unilateral and the cause clearly some local injury; even then a predisposition exists.

Anæsthesia corneæ is not so great in degree or in the area involved in acute, as in chronic glaucoma; in acute glaucoma it may be limited to some one part of the cornea, while in the chronic form the whole cornea is about equally affected. If this symptom were due to high tension, it would be more pronounced in acute glaucoma; that this is not true, favors the idea of an invasion of the canal containing the nerve by new tissue in the chronic affection.

The *bluish-gray tint* of the media may be caused by the presence of an increased number of wandering cells or by exceeding fine fibrillæ of new-formed connective tissue, or by the presence of uric acid crystals.

Obstruction of the channels of filtration is not a cause of glaucoma, as seems to be understood by those who favor the "filtration theory," nor does this obstruction come from the interior of the globe by the advancement of the iris and its application to the posterior surface of the cornea. This may occur, but it is *secondary* to obstruction of the channels. If obstruction took place by application of the iris, the process would complete a "vicious circle," and two things would be expected which do not happen: (a) the exits being closed, the pressure of fluids would be toward the posterior channel of excretion (Leher) near the optic nerve, with *deepening* of the anterior chamber; (b) the channels being closed by the application of the iris to the posterior surface of the cornea, "thus establishing glaucoma," the obstruction and increased intra-ocular tension, in the nature of things, would act and react upon each other, and the condition would grow worse until relieved by (mechanical) surgical interference. Is this the case? "These slight attacks of glaucoma, often lasting only a few hours, clearly disprove the distention theory.¹ How is that theory to be reconciled with the fact that the attacks occur suddenly, and soon afterward disappear spontaneously? How can the filtration at the angle of the chamber be so suddenly interrupted and so wonderfully soon re-established?"

Does not reason rather lean toward the following?

Scleral changes may be found in all cases of primary glaucoma, hypertrophy with increased rigidity, which begins always in the posterior portion of the sclerotic, about the entrance of the optic nerve (Alt), advances gradually to the corneo-scleral margin and encroaches upon the channels of excretion. Such changes, beginning posteriorly, reduce the size of the emissaries as they pass through the sclerotic and cause venous stasis: this, with the diminution of space in the vitreous chamber by hypertrophied sclera, causes advancement of its contents, and may lessen the depth of the anterior chamber without increasing the intra-ocular

¹ Schweigger: Archiv f. Augenheilkunde, vol. xxiii.

tension, as sometimes happens. The neoplastic connective tissue, during the interval, invades the optic nerve, and all is prepared for an increase of tension as soon as the morbid tissue so occupies the channels as to *slow* excretion. Now, some circumstance (an injury, mental emotion, exposure, imprudence in diet) violently disturbs the circulation (local or general), and precipitates an attack of glaucoma. Or, no such cause acting, simple glaucoma is developed with its whole train of symptoms.

In case of acute glaucoma, the vascular disturbance over, the engorgement passes off, leaving the channels much as they were immediately before the attack, which could not happen if the obstruction were due to the application of the iris to the cornea. Iridectomy probably acts by promptly relieving such engorgement; myosis, by creating a diverticulum. The narrowing of the channels by hyaline¹ and epithelial masses, or by cicatricial contraction, is of more permanent character, does not belong to the early stage, and cannot be cured by iridectomy, or any other operation anterior to the vitreous. Only the *result* of the operation can, at times, decide the character of the obstruction.

Dilatation of the pupil (which is not always present), which varies in degree and regularity with the same degree of tension, depends upon constriction of the motor filaments to the iris from the third nerve, as they pass through the thickened sclera.

The shallow anterior chamber is a result of the advancement of the corpus vitrei caused by venous stasis and the encroachment by the sclera upon the vitreous space (this being possibly a factor in the dilatation of the pupil); for, by scleral hypertrophy and the resulting atrophy of the uveal tract, the secretion of the aqueous humor is diminished and the resistance *ab fronte* is reduced; hence, the very temporary relief from paracentesis of the anterior chamber (*similia similibus*).

Excavation is rare in a first acute attack, and therefore *cannot* be entirely due to pressure, which is sometimes excessive in such attack. As the disease progresses the resistance at the papilla is lessened by the same agent which so effectually degrades the other tissues and permits the effect of pressure to appear; or, the excavation is due to contraction of the new morbid tissue.

"A delicate connective tissue is frequently found in glaucomatous excavations, having been formed in the adjacent part of the vitreous body."² "I have not infrequently seen a well-marked glaucomatous excavation on one side, and a neuritis of mild but distinct form, with stretching (?) of the tissue and beginning excavation, in the other eye."³ Is there any difference in appearance between glaucomatous excavation and that which follows gray atrophy?

¹ De Wecker: Ocular Therapeutics, English ed., 1879, p. 260.

² Alt, *vid. sup.*, p. 156.

³ E. G. Loring: Text-book of Ophthalmoscopy, vol. ii., p. 229.

In event that intra-ocular pressure alone in glaucoma could produce excavation in a papilla of normal resistance, it would be *funnel-shaped*. This is rarely true; the excavation is usually shaped like a *cup*, or *truncated pyramid*, the width being often greater than the depth, the structure disappearing laterally to a point under a ledge of the sclerotic, which protects it from *direct* pressure. This pathological peculiarity can be due, alone, to neither intra-ocular pressure, nor to modification of tissue in the papilla, but is the product of the action of both. The atrophic process in the optic nerve seems to be caused by the extension and proliferation of fine connective tissue, and its subsequent *contraction*. "There is a continuity of inner connective tissue of the optic nerve with that of the sclerotic and choroid."¹ To this same agent is probably due the grayish-yellow glaucomatous ring.

The *acuteness and field* of vision are controlled by the same influences, and *pari passu*, which modify the appearance and condition of the papilla.

*Arterial pulsation*² occurs when the normal balance between general arterial tension and intra-ocular tension is disturbed. *Reduction* of blood-pressure takes place when the lumen of the arteries is diminished by infiltrated new connective tissue, as is common in lithiasis, and thus we may have arterial pulsation without increase of intra-ocular tension, or excavation of the disk. *Impure blood excites spasm of the smaller arteries*.

Mydriasis reduces, and *myosis* increases the area of vascular distribution of the ciliary region. By mydriasis the arterial circulation is suddenly obstructed, resulting in temporary engorgement, which may be sufficient to excite an acute glaucoma if the channels of excretion are narrowed. Hypermetropia favors ciliary engorgement by constant excessive demands upon the ciliary muscle. Therefore, "chronic glaucoma"³ is a neurosis (vasomotor)—a progressive atrophy with the feature of inflammation with defective power; acute inflammatory glaucoma is a paroxysmal expression of the same affection."

THE MECKEL DIVERTICULUM.⁴

By D. S. LAMB, M.D.,

PATHOLOGIST ARMY MEDICAL MUSEUM, WASHINGTON, D. C., ETC.

I HAVE given the subject of the Meckel diverticulum some research, have had occasion to examine the seventeen specimens in the Army

¹ Löwig: Studien des Phys. Inst. Breslau, 1858, p. 125.

² Schweigger: Archiv f. Ophthalmologie, Oct. 1891, p. 491, 492.

³ Richey: AMER. JOURN. MED. SCIENCES, Nov. 1892; Trans. Amer. Ophthal. Soc., 1892.

⁴ Read before the Association of American Anatomists, at Princeton, N. J., December 27-29, 1892.

Medical Museum, Washington, D. C., and have tabulated and analyzed nearly two hundred recorded cases.

The characteristics of this diverticulum are well known. It is single; that is, there is but one in the same individual; it is usually at right angles to the small intestine, into which it opens; usually also on the convex side of the intestine (the side opposite the mesentery), although, more rarely, it may be attached laterally or to the mesenteric side; it is nourished by the mesenteric vessels; it is usually tubular in shape, but may be globular, or conical, or inversely conical (*i. e.*, with the base at the opposite end from the intestinal attachment); its walls are composed of the same coats as the intestine. Its length varies from a very small size to as much as seven inches. It is usually found in the lower part of the ileum, but is said also to have been seen in the higher part, and even in the jejunum and duodenum.

The expressions *true* and *false* diverticulum, often used to distinguish the Meckel diverticulum from those pouches sometimes found as the result of hernial protrusion, are not, to my mind, correct. A diverticulum is so called from its shape and relations. It is either a diverticulum or not; if it *is* one, it must be a *true* one. The hernial pouches, resulting from inflammation and other causes, had better be called hernial pouches, and not false diverticula, because they are not false diverticula. The Meckel diverticulum is usually spoken of as the Meckel diverticulum, because, although Lavater was the first to record its being observed, and Ruysch the first to call it a diverticulum, John Frederick Meckel was the first to distinguish between the form which goes by his name and the hernial pouches above mentioned. The designation seems to be entirely satisfactory and more desirable than other names, such as the diverticulum ilei, which is open to the objection that it may not always be found in the ileum.

Instead of a diverticulum there may be an open canal extending from the intestine to the umbilicus, and may even open at the umbilicus, so that feces may discharge by the opening. There are other cases in which a cord of variable length may pass from the apex or from near the apex of the diverticulum to the umbilicus, or some other part of the abdominal wall; or to one of the viscera, preferably the mesentery; or may lie free in the peritoneal cavity. Struthers, of Edinburgh, states that he always found this ligament present if the specimen was examined while in a moist state; and sometimes the shrunken umbilical vesicle was found in the upper part of the ligament. Sometimes, also, there is a bridge or valve at the intestinal end, making two openings there. Meckel thought that this valvular arrangement was the mode in which the original opening of the ovo-vitelline duct into the intestine began to close.

The last few sentences suggest the probable *cause* of the diverticulum.

Ziegler, Wilks, Moxon, Osler, Birch-Hirschfeld, Meckel, Struthers, Quain, Henle, Cazin, Gegenbauer, Allen, and others agree that it is due to a failure of the intestinal end of the ovo-vitelline (omphalo-mesenteric) duct to become obliterated. Some writers speak more doubtfully. Macalister says it is *supposed* to be the remnant, etc. The portion not obliterated develops on the same line as the intestine, that is, acquires similar coats, mucous, muscular, and serous.

In the embryo, as is well known, the yolk-sac and intestine are for some length of time in direct communication through the open abdominal wall; afterward they become separated by the closure of the wall, and are connected then by the canal called the ovo-vitelline, or omphalo-mesenteric, duct. Alongside the duct are the corresponding artery and vein. The usual statement is that the duct communicates with that part of the intestine which later would be called the lower ileum or lower fourth of small intestine. This junction corresponds to the part which forms the *primitive fold* of the intestine, and is near the cæcum. About the sixth week of embryonic life the umbilical vesicle and the duct and vessels begin to wither away, and by the end of pregnancy there remains only a fibrous cord, which may have been broken or undergone fatty or other degeneration. Courty has found the vesicle as late as the fifth month, and Hunter at the end of pregnancy, although no larger than at the second or third month.

Should any disturbing influence interfere with this shrinkage, a portion of the duct may remain open, or, indeed, the entire duct may remain open to the umbilicus, or a portion may close and become the fibrous cord already described. Such disturbing influences may not affect this part of the body alone. The anomaly of this diverticulum has been found to coexist with transposition of the viscera, with hare-lip, with bicornate uterus, with spina bifida, with umbilical hernia, with absence of cardiac septum, with atresia of the anus, with exstrophy of bladder, in anencephalous monsters, etc.

The diverticulum is found in other animals—in the ape, the dog, etc. The entire canal to the umbilicus may persist in the lower order of birds, as the grallatores, natatores, and, exceptionally, in the raptores and passerres; also in reptiles and cartilaginous fishes.

From what has been said, we would expect to find the diverticulum somewhere in the lower fourth of the small intestine. Accepting the usual statement that the small intestine is about 20 feet long, we should find the diverticulum in the last 5 feet—therefore in the ileum.

But what is the length of the small intestine? There are differences of statement. Macalister, excluding the duodenum, gives the length as 6.75 metres, or 22.25 feet; of this, he allows a third, or a little over 7 feet, to the jejunum, and somewhat over 15 feet to the ileum. Leidy

gives 20 feet, adding that the length varies between 15 and 25 feet, and mentions the case of a man in whom the small intestine was 26.25 feet. Gegenbauer says 5.5 to 6.5 metres; equal to 18 to 21 feet. Krause gives 4.2 to 8.5 metres; but he says it is more commonly 5.5 to 6.2 metres, which makes it nearly the same as Gegenbauer. Krause allows two-fifths to the jejunum and three-fifths to the ileum. Allen says the jejuno-ileum measures 15 to 20 feet; two-fifths is jejunum and three-fifths ileum. Treves, quoted by Gray, "found, in 100 cases, the average in the male was 22.5 feet; female, 23.33 feet; but that in the male the measurements varied between 15.5 and nearly 32. In the infant it is 9.5 feet, and during the first two months it grows about 4 feet."

I must say that I have but little confidence in these measurements. In whatever way the intestine may be measured, it will stretch, especially if the mesentery be removed; and I do not see how the measurement can be taken unless the mesentery is removed. This stretching will, of course, give a greater length than the true one; but how much greater no one can tell. Some years since I helped to take measurements of the small intestine in 48 cases; 9 of the cases were nineteen years old and under. As, however, Treves thinks that age, height, and weight have nothing to do with the length, I will give the results regardless of age.¹

Twenty-two, or nearly half the cases, showed a length of 24 to 26 feet. The largest number of these measured 25 feet, and we might, therefore, call this the average. But this is higher than any other averages I have seen. All these measurements, however, were taken on negroes and mulattoes. It is just possible that this may be some explanation of the large figures. The large intestine was measured in the same series of cases.² In two-thirds of them it measured from 5 to 6 feet.

We will accept, however, the statement that 20 feet is the average length of the small intestine, and allow two-fifths to the jejunum and three-fifths to the ileum. Of course, the distinction between the lower jejunum and the upper ileum is arbitrary; nobody can say where one ends and the other begins, and the division by fifths is, therefore, probably as good as any division that can be made.

Most writers state that the communication of the ovo-vitelline duct is

¹ The length of the small intestine was 15 feet in one case; 19 in one; 20 in two; 22 in two; 22.5 in one; 24 in five; 24.5 in one; 25 in eight; 25.5 in one; 26 in seven; 27 in one; 27.5 in one; 28 in two; 29 in five; 30 in one; 32 in four; 33 in three; 34 in one; 40 in one. I think this is enough variety—anywhere between 15 and 40 feet.

² 3.5 feet in two cases; 4.5 in eight; 5 in thirteen; 5.5 in eight; 6 in eleven; 7 in four; 8 in one.

within the lower fourth of the small intestine, and also that the diverticulum is in the lower fourth—that is, in the lower five feet.¹

An analysis of the 185 cases which I tabulated gives the following results: In 39, or 21 per cent., the diverticulum was found between the ileo colic valve and 1 foot above the valve.² In 20 cases, or 10 per cent., it was 1 or 2 feet above the valve.³ In 22 cases, or 12 per cent., it was from 2 to 3 feet.⁴ In 4 cases, from 3 to 4 feet; in 8 cases, from 4 to 5 feet; in 4 cases, from 5 to 6 feet; in 1 case, 10 feet above. In all, 98 of the 185 cases reported. In 62 other cases no measured distance was given, but the ileum is stated or implied.⁵ These, added to the 98, make 160, or 86 per cent., in which the diverticulum was without doubt in the ileum.

Twenty-one cases remain in which the anomaly was said to have been in the jejunum or duodenum: duodenum, 7 cases; jejunum, 14. These deserve to be considered somewhat critically.

In 7 cases it was said that the anomaly was in the jejunum; in 1 case, in the middle of the jejunum; once, in the third or fourth inch; once, in the lower part. In 4 cases the jejunum was implied; as, once, where it was 2 feet from the pylorus; once, 40 inches from the duodenum; once, in the first 3 feet of the small intestine; once, 15 feet from the ileo-colic valve.

The reporters of these cases were as follows: One by Cornillon, Anatomical Society, Paris; one by Buzzi, *Virchow's Archiv*; one by Moore, London Pathological Society; one by Beale, London Pathological Society; two by Dr. Elliott Coues, in which he says "jejunum;" one by Clarkson and Collard, *Journal of Anatomy and Physiology*, Lon-

¹ Macalister says: "The lower fourth, where the vitelline pedicle was attached." Osler says: "The beginning of the ileum;" this would be somewhere about 12 feet from the ileo-colic valve. Osler is certainly wrong as to the average. Albers says that the diverticulum is preferably in the ileum about the middle; this would be about 6 feet from the valve. Gegenbauer says one-half or one metre from the valve, that is, 1.5 to 3 feet. Ziegler says, one metre or more; Henle, 1.5 to 3 feet; Wilks, 2 to 3 feet; Allen, 3 feet. Cazin says it is always in the ileum, and within three feet of the valve. Förster, Rokitanski, and Ziegler did not find it in the jejunum.

² Eight of these, however, were infants between the time of birth and five months old, leaving 31 adults, or, where the age was not given, presumably adults. In 6 of these 39, it was stated that the anomaly was "at" or "near" or "just above" the valve.

³ This includes 2 infants between birth and fourteen months, leaving 18, probably adults.

⁴ Including one child three years old.

⁵ It was simply stated to be "above the valve" in one case; "the usual place in ileum" in one; "lower ileum" in eighteen; "ileum" in thirty-two, including an eight months' fetus; "lower third of small intestine" in one; "junction of middle and lower thirds of small intestine" in two—both four months' fetuses; simply "small intestine" in seven.

I assume that by small intestine was meant the ileum: if these 7 are excluded, we still have 153.

don, who say, "in jejunum, 2 feet from pylorus;" one in the Museum of St. Bartholomew's Hospital; one in the Museum of Ft. Pitt, Chatham; one in the pathological catalogue of the College of Surgeons, London; two in Museum of the Medical College, Madras; one in St. George's Hospital Museum; one in Charing-Cross Hospital Museum. I see no reason to doubt the accuracy of these statements, although it is possible that one or more may not be correct.

As to the duodenum, 7 cases are reported. In 4 there is simply the statement that the anomaly was in the duodenum; in 1, in the upper part of the duodenum; in 1, in the middle; in 1, about 10 inches from stomach. One of the cases is reported by Albers in his work on *Pathological Anatomy*; he saw the anomaly in the transverse portion. The specimen in the St. George's Hospital Museum, London, is described as a rounded pouch on the duodenum; the 3 cases in the Pathological Museum, Royal College of Surgeons, London, as pouches on duodenum; no further details. There are 2 cases in the Army Medical Museum, Washington; published in the catalogue of 1867. One of these is from Dr. S. S. Bond, of Washington, and shows a diverticulum two inches long, evidently from the middle of the duodenum, from a dark mulatto, aged seventy-one; the mucous membrane of the pouch is distinct, but the outer walls are so thin that there is a doubt whether any muscular fibres are present. The second specimen was contributed by a Dr. W. C. Miner, U. S. Army, whom I personally knew, and who was in good repute as an anatomist and pathologist. The specimen is described as from the upper part of the duodenum, about ten inches from the stomach. These two statements are not consistent. An examination shows the specimen to be from the ileum; how low down I cannot say, but there are no valvulae conniventes. How, or by whom, this mistake was made cannot now be ascertained, but that it is a mistake is beyond a doubt.

The 4 cases in the London Museums are too briefly described to warrant any expression of opinion other than that the statements are probably correct. The case of Albers must be admitted. Of the 2 specimens in the Army Medical Museum, I have shown that 1 is incorrectly described, it being really from the ileum. Of the other I can only say that I am not satisfied that it is a Meckel diverticulum.

I believe we must admit the possibility of the occurrence of this diverticulum in the jejunum and duodenum, but I also think that all reported cases, and the specimens when possible, should be carefully examined. I do not know of anything in the history of development to prevent the ovo-vitelline duct from opening into the intestine in other places than the lower part of the ileum. The fact that it usually does open here is apparently according to some law; that it may open elsewhere would then be simply an exception, and the exception does not appear to cause any marked disturbance of nutritive processes. Buzzi,

above quoted, suggests that the connection of the duct near the cæcum may afterward, during development, "ascend to the jejunum." Whether there is an absolutely necessary relationship between the duct connection and the primitive fold of the intestine I do not know; this is an interesting and perhaps important question. So far as the analysis of cases shows, out of the 98 in which the distance from the ileo-colic valve is stated, in three-fifths the anomaly occurred within the first two feet of the ileum, above the valve; in more than four-fifths within the first three feet, so that it is fair to state that its usual place is within these three feet.

Eleven of the cases are reported as from children and fœtuses. The greatest distance from the valve in a child was 26 inches—in a child three years old. The next greatest was 20 inches—in a fourteen-months-old infant. The remaining cases were 13 inches or less. It would be fair to assume that in most infants and children it would be between 3 and 12 inches from the valve. The average length of the small intestine in the newborn infant, according to Treves, is 9.5 feet,¹ and he says it grows 4 feet in the first two months. In 1 of these 11 cases, in an infant five days old, the diverticulum was 10 inches from the valve; the reporter says the entire small intestine measured 60 inches; the anomaly was therefore at the junction of the fifth and sixth sixths.

Statements differ somewhat as to the frequency with which the diverticulum is found. Albers says about once in 1000 bodies examined. He never saw it in children. This percentage is much too small. Osler found it in 2 per cent., and this agrees with the result of the collective investigation of the Anatomical Society of Great Britain and Ireland, which was 16 times in 769 subjects. Mr. Rolliston, of St. George's Hospital, in 337 subjects found it 10 times; that is, 3.37 per cent. I have no figures to offer from my own observation, not having always kept a record of the occurrence of the anomaly.

Another interesting question arises, namely, as to the relative frequency in the sexes. Although Rolliston examined about as many women as men, he found 9 of his 10 cases in males. I have nothing to offer on this point; the records are not sufficiently complete. Neither can an opinion of value be formed from the list I have tabulated. If there is a difference in the relative frequency there must be some explanation which, as yet, we have not discovered.

Diverticula vary much in length. Henle says they are from $\frac{1}{2}$ inch to 6 inches; Albers, 1 to 7; Cazin, 1 to 7 or 8. Most other writers give an average of 3 inches. Of the 185 cases collated, the length was stated in 109.² The analysis of the 109 cases gives the following result:

¹ This corresponds exactly with a measurement I have just made in a newborn infant: small intestine 9½, large 2 feet.

² In 8 others such expressions were used as large, small, size of bean, of horse-bean, pullet's egg, and hen's egg.

Infantile and foetal.	Adult.	Not stated.	Total.	
6	6	1	13	One inch long and under.
4	34	6	44	One to two inches long.
2	22	5	29	Two to three " "
...	5	10	15	Three to four " "
...	...	5	5	Four to five " "
...	...	2	2	Six inches long.
...	1	...	1	Seven inches long.
12	68	29	109	

The greatest length in an adult was 7 inches, a specimen from a sixteen-year-old boy; the greatest length in an infant, fourteen months old, was 3 inches. In 6 infants and foetuses, between four months' foetal and fourteen months' infantile life, the diverticulum was 1 inch and under in one half, and between 1 and 3 inches in the other half. In one-half the adults it was between 1 and 2 inches; in five-sixths between 1 and 3 inches. Of the entire 109 cases, the number of those in which it was between 1 and 2 inches long exactly equals those in which it was between 2 and 4 inches; giving an average, therefore, of 2 inches in length.

An interesting question is as to the presence of a cord attached to or near the apex of the diverticulum, the other end lying free in the abdominal cavity, or attached to the abdominal wall or to one of the viscera. Of the 185 cases tabulated, the cord was reported present in only 22, or 12 per cent. The meagreness of detail of some cases suggests that it probably existed oftener than stated. In no case was it said to lie free in the abdominal cavity, although in 3 its place of attachment, if any, is not mentioned. In 7 cases it was attached to the umbilicus, and in 2 others to the wall just below the umbilicus. In these 9 cases the distance from the ileo-colic valve varied from 8 to 24 inches; all believed to be adults except one, which was an infant five days old. In 3 cases the length of the cord is given: 1 inch in 2 cases, 2 inches in 1 case. In 1 an artery in the cord was distinguished by the preservative injection used; in another there were three cords, answering to the duct, artery, and vein. Rolliston states that in none of the 10 cases reported by him did the cord extend to the umbilicus.

In 10 cases the cord was attached to the mesentery; in 1 to the ileum; in 1 to the ascending colon. Sometimes the cord was not mentioned, but the diverticulum was said to be attached to the omentum in 2 cases, in 1 to the mesentery, and in 1 to ileum. In this second group of 16 cases, the distance from the valve, where stated, exceeded 3 feet only once. The length of the cord was given 8 times, varying from $\frac{1}{4}$ to 4 inches.

As is well known, disturbances of digestion and serious danger to life have been caused by diverticula. They may be invaginated, and unless this is relieved death will follow. Foreign bodies may lodge in them

and set up inflammation and ulceration ; sometimes perforation and fatal peritonitis. Typhoid ulceration may occur in them, and may be fatal. When they have a cord, the outer end of which is attached to some other part of the abdomen, this may cause strangulation of the intestine. Diverticula may lodge in hernial sacs and cause fatal disturbance.

Where the duct extends all the way to the umbilicus, and the latter is patulous, feces may be discharged from this opening. At least 4 cases of this kind are on record. One by Förster: a woman, aged thirty-four ; small quantities of mucus and food had been discharged since her earliest childhood, but did not trouble her. The apex of the diverticulum was found attached to the inner side of the umbilicus and communicated externally. (See *Würzburg. med. Zeitschrift*, 1862, p. 205.) Another case by Gesenius—an infant ; the navel string fell off, leaving an opening from which was discharged a little yellowish fluid and greenish intestinal contents. (*Journ. f. Kinderheilk.*, Erlangen, 1858, p. 56.) In the Museum catalogue of Guy's Hospital, London, are 2 cases: the apex of the diverticulum was attached in one to the umbilicus, in the other, near by ; in each the feces were passed to some extent through the opening.

THROMBOSIS OF THE FEMORAL VEIN IN PHTHISIS.

By P. R. DODWELL, M.D. LOND., M.R.C.P. LOND.,

ASSISTANT RESIDENT MEDICAL OFFICER, HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST,
BROMPTON, LONDON.

INTERESTING as is the subject of peripheral venous thrombosis, and obscure as its origin often is, the connection between this condition and pulmonary phthisis, though well known and recognized, has not received so much attention as have the numerous other complications of this disease. This is scarcely to be wondered at when we consider how late an event it usually is, and, consequently, how hopeless the condition of the patient has become.

It is with the object of drawing attention to this particular complication of pulmonary phthisis that the present paper is put forth, in the hope of eliciting information from a variety of sources, and not with any tion of authoritatively setting up any theory.

By the kindness of the staff of the Hospital for Consumption and Diseases of the Chest, Brompton, including the pathologists past and present, I have been able to make use of the clinical and pathological reports for the last few years, and from them I have collected the rather small number of 20 cases in which thrombosis of the veins of the lower extremities has been proved by post-mortem examination. These 20 cases have been collected from the reports of about 1300 post-mortems made upon

phthisical patients dying in the hospital, thus representing a little over $1\frac{1}{2}$ per cent. My own experience, extending over the last two years would place the proportion rather higher, at nearly 3 per cent. ; but it does not follow that the higher figure would be maintained—for though it is probable that some instances occurring in the period over which my researches extend have escaped detection or record, yet, since the cases are fairly uniformly distributed over the various years, it would seem that the above figures represent, nearly, the relative frequency of the occurrence of the event in question.

PATHOLOGICAL EXAMINATION.—Few as these cases are, the analysis of the pathological accounts is in some points striking. We find in the first place that the left leg only was the seat of thrombosis in 10 of the number, while the right alone afforded 7 instances, and in 3 the lesion was on both sides; but of these 3, it was stated in 2 that the thrombus on the left side was both older and more extensive than on the right. We must, therefore, modify the original statement to the following: In 12 cases the side first affected was the left; in 7, the right; and in 1, doubtful. In examining the exact position and extent of the clot in the veins we meet with considerable difficulty, for the veins of the extremity are very seldom minutely examined. Any statement, therefore, as to the relative frequency of the affection in particular veins would be misleading. This, however, may be said: with the exception only of one case to be mentioned again, there was a thrombus at or near the level of Poupart's ligament in every one, and this appears to have extended upward and downward, but in the latter direction rather more frequently than in the former. There are a few facts, however, to be mentioned which appear to place the site of the origin of the process at a somewhat different level. Firstly, in nearly all cases in which it was stated to have been examined, the popliteal vein was found the seat of clot, which in most of these instances was declared to be of older date than that in the veins above. We shall further see in dealing with the clinical evidence that, in the majority of instances, the first symptoms are referred to the popliteal space, or its neighborhood. In several of the reports the saphena vein is stated to have been plugged, while in one, many of the superficial veins, as well as the main trunk from the tibial vein upward, were thrombosed.

In one case, not included in the twenty, for the opportunity of examining which I am indebted to the kindness of Dr. Hector Mackenzie, pathologist to the Brompton Hospital, the left femoral vein contained an old ante-mortem clot situated opposite the orifice of the profunda vein. This clot extended upward for an inch above Poupart's ligament, downward for a little more than an inch below the profunda, and backward into the profunda for about the same distance. Beyond these points the clot was post-mortem, and the trunk of the femoral along Hunter's canal was occupied by post-mortem clot. The origin of this process in

the femoral appeared to be one of the deep muscular branches, joining it on its posterior aspect, in which there was a particularly firm laminated clot. Continuing down the main trunk of the limb I found a second deposit in the popliteal vein, which was filled by old firm organized coagulum not yet extending upward to join that in the femoral vein above. It was, however, continuous downward with a deposit in both venæ comites of the posterior tibial artery, in the muscular branches of the calf as well as in the peroneal. Clots also existed in the muscular branches joining the popliteal. The right leg, in which there had been no œdema at all, and no symptoms pointing to thrombosis, presented a very interesting condition. The femoral and popliteal veins were quite free, but two muscular branches in the calf were plugged; and in continuation with the clot in them there lay one in one of the posterior tibial venæ comites. This clot obstructed the latter vein for a short distance in the middle of its course, but above and below it the upper and lower thirds of the vessel were quite free, as also was the companion vena comes accompanying the same artery. The origin of the thrombosis in this case was evidently in the muscular branches of the calf, spreading from them to the vena comes of the posterior tibial.

The same patient presented a third distinct obstruction in the left internal iliac, from which a large mass of laminated clot projected into the common and external iliac veins. — This patient, to whom reference will again be made, I shall call C.

In one instance there was found a tough laminated clot in the profunda, extending deeply into its branches and projecting into the trunk of the femoral, and obstructing it; but nowhere else throughout the main vein of the limb was there any evidence of ante-mortem coagulation. The saphena vein, however, in the same case was obstructed by a clot apparently quite distinct from that within the femoral. This case I shall refer to as O.

In two instances only, among the twenty tabulated reports, was the internal iliac affected, once on the right and once on the left side.

The left common iliac was stated to be plugged on one occasion, associated with extensive clotting on the same side below, as well as a deposit of less extent in the veins upon the right side. In one other instance, namely, the exceptional case referred to above, the left common iliac was the sole seat of a thrombus which had formed suddenly, with pronounced symptoms, twenty-four hours before death.

Instances of thrombosis in the vessels of other parts of the body are not numerous in the cases under examination. The uterine veins were occupied by old clot in one, but it was distinctly stated that there was no connection to be made between this and the lesion in the veins of the extremity.

The prostatic plexus was once the seat of extensive thrombosis, and on one occasion the brachial vein, on the same side as the affected femoral vein, was plugged. In one instance, the arterial system was affected, the trunk involved being the popliteal artery adjacent to the obstructed vein.

Embolism of distant arteries was a complication by no means uncommon. The cases at my disposal furnish four instances of such affection, and in all, the pulmonary artery was the one involved. In one instance the branches plugged were small and numerous, in the remaining three they were branches of considerable size, being about third divisions of the main vessel of the lung. Two of these four cases occurred on each side.

Numerous other complications are included in the reports; ulceration of the intestines, occurring seventeen times out of twenty, being by far the most frequent. This large proportion, representing 85 per cent., is far higher than the percentage of intestinal tubercle occurring in post-mortems on all cases of phthisis. In a paper published¹ by Dr. Soltau Fenwick and myself, we stated the proportion of intestinal tuberculosis to all cases of phthisis, maintained by most authorities, to be about 65 to 70 per cent. Our own statistics gave a percentage of 66.5. Ulceration of the larynx also existed in a far larger number of cases than published statistics affirm. Nine out of the total, or 45 per cent., exhibited this complication, and in all but one of these the intestines were affected as well. Ulceration of the pharynx and of the trachea and bronchi existed each in one case.

Lardaceous degeneration of internal organs was present in two instances.

A notable complication among my cases was the affection of the lymphatic glands. Tuberculous infiltration and softening of considerable extent were recorded in three subjects.

Fistula-in-ano occurred twice, while general peritonitis and hemorrhage from the bowel are mentioned each on one occasion.

Of other less important associated morbid conditions we meet with granular kidney (one case) and renal calculus (once).

The condition of the lungs presents a remarkable uniformity throughout the reports.

In only three instances is it stated that there was fibrosis to any marked extent. In all, the disease was present in both lungs and affected all the lobes of the lung; extensive excavation had taken place in every one; and in all it was prominently stated that there was evidence of advancing disease in the shape of recent deposits of caseous tubercles, either in small or large groups; while in a large number of reports it is declared that there was an absence of all evidence of chronic disease or repair. On two occasions deposits of tubercle beneath the pulmonary pleura had ulcerated through that membrane and produced pneumothorax. This event happened both times on the left side. In one patient the necrotic process had been so intense that at the post-

¹ *Lancet*, July, 1892.

mortem a large portion of the left lower lobe was found to be gangrenous.

The cases under consideration therefore fall into one group in regard to activity; in all, the tubercular process was still advancing at the time of death, and I think we may go a step farther and say that the condition was active enough to merit the term subacute, in contradistinction, on the one hand, to that variety in which we have large areas of solid pigmented fibroid tissue surrounding tuberculated cavities, and which we call chronic; and on the other, to the group of cases called acute, in which are found large patches, perhaps whole lobes, completely solid, resembling in appearance broncho-pneumonia, with little if any excavation. In these solid patches, the individual naked-eye tubercles may be quite obscured in the central portions, but are, as a rule, plain enough about the margins. The variety and frequency of the complications that have been mentioned support the view taken with respect to the lungs; for it is in cases of moderate duration, rather than in either the very acute or very chronic, that these associated conditions present anything like the prominence that has here been detailed.

In considering the symptoms during life we shall see that the same term is applicable to the course of the majority, if not of all.

In this connection, comparison with acute general tuberculosis is left out of the question.

CLINICAL.—I pass now to the examination of the clinical notes. Unfortunately, full reports of the course of the illness in all cases are not obtainable, but from those at hand I have collected some facts no less important than those related in the pathological section.

In only five instances was any history of phthisis obtainable in the family; one patient gave a strong collateral history of insanity.

The proportion of males to females was very nearly the same as that existing between the two sexes in the total number of persons admitted to the hospital in the course of the year, namely, 12 to 8.

The age of the subjects varied between twelve and forty-nine years. There were four examples in each of the decades, eleven to twenty and thirty-one to forty; two were over forty; and the remainder, being half the total number, belong to the decade, twenty-one to thirty.

Two patients gave a history of alcoholism. The onset in nearly all was insidious and no distinct invasion was recorded. The duration of the disease was consequently not perfectly certain in all cases. Reckoning from the first occurrence of symptoms to the time of death, we find that no less than fourteen died in between eight and fifteen months. Two succumbed in less than eight months, one in five, and one in six months; one lived for a year and nine months, one for two years, and one had been ailing, on and off, for three years. In one case the duration was not ascertained.

Not one of the total presented a shorter history than five months ; and if we bracket together all those who suffered between five and twenty-one months, we find that all but two fall into this division. The average duration in these ascertained cases was $13\frac{1}{2}$ months.

Wilson Fox¹ gives the average duration for cases classified by him as acute, for males $5\frac{3}{4}$ months, for females $8\frac{1}{2}$ months. In the cases before us the average for males was $14\frac{1}{11}$ months, and for females $11\frac{1}{2}$ months. The higher average for males in my series is accounted for by the inclusion of the two of longer duration, two years and three years, respectively. The same author quoted above does not attempt to give any average time for chronic phthisis, as instances vary between such wide limits. The time from onset to death in the last is rather to be measured by years than by months.

Whatever nomenclature we adopt, or whatever meaning we attach to the terms, acute, subacute, and chronic, we are bound to admit a striking resemblance in duration between these cases and to assign to them a middle place in any series.

A notable feature in the accounts of the symptoms of these patients was that in only two was there any mention whatever of the occurrence of hæmoptysis, and in both of these it was slight, amounting only to streaks or traces of blood. On no occasion was there profuse hæmoptysis. This contrasts strongly with published statistics of cases of chronic phthisis. Thus, Walshe² places the frequency of this accident at 80 per cent., and Reginald Thompson³ as low as 45 per cent. The consideration of the course of the temperature serves to strengthen still further the opinion already set forth that these cases belong, as a rule, to an intermediate class. In only fourteen of the total are the temperature charts available. The regular evening rise and morning fall of chronic phthisis is sufficiently closely associated with this disease to be considered characteristic. Now, in only five of my charts does the temperature present this form ; in the remaining nine, though at times hectic and remittent, there are long periods during which the temperature in the morning fails to fall to normal, remaining the same or declining but slightly below that of the evening, thus approaching the continuous type. In some charts the same semi-continuous character is maintained throughout the whole time that the patients remained under observation—six weeks to three months. In others, as mentioned before, both forms are illustrated, at one time the remittent, at another the continuous. In one case, representing a fairly typical example, during the remittent period the temperature rose to

¹ Treatise on Diseases of the Lungs and Pleura. 1891.

² Brit. and For. Med.-Chir. Rev., 1849.

³ Pulmonary Hemorrhage.

between 101° and 103° at night, falling to 98° or 97.5° in the morning, while during the continuous period a fairly constant level between 100° and 101° was maintained. Occasionally the mean level during the continuous period rose to rather higher than this. There is no constant relation shown between the course of the pyrexia and the onset of thrombosis; the more common condition is for the temperature to remain constantly up for some weeks preceding the supervention of this process.

In one case in which the remittent course was followed, the evening rises being high and the morning falls low, the patient suffered from occasional rigors during the whole of his stay in the hospital.

In the instance of pharyngeal ulceration mentioned above, the symptom dysphagia was so intense that rectal feeding was resorted to with temporary relief.

Remissions in the course of the disease, if we place reliance upon the accounts given by the subjects, were almost entirely absent. Only in the two cases of longer duration, two and three years respectively, was there any reason to believe that the process remained inactive for a time.

In the first of these exceptions, T. D., duration two years, although he had been ailing for two years, emaciation had proceeded sufficiently to attract his attention only during the preceding twelve months. The cough and expectoration also, from which he had suffered for two years, became worse for the same period; moreover, the temperature throughout his stay in the hospital—three months—was high and irregular, presenting a few semi-continuous periods and a marked remittent type, rising at night frequently to 103° . Diarrhoea, though slight, was present in this case.

In the second case, G. W., three years' duration, we find that although he gave no history of an exacerbation of symptoms recently, yet, while he was under observation, the temperature followed a very similar course to that described in the last case, and that he suffered from diarrhoea. It was this patient who developed the rigors mentioned above.

We are therefore justified in concluding that, whatever the previous history of these two patients, for the time during which they were under observation, about three months each, the course of the disease was sub-acute. It was in these two cases that the history of alcoholic excess, referred to above, was obtained.

We are now entitled to claim that the cases collected are similar in their pathological and clinical phenomena; and, as a class, contrast with the other two forms of pulmonary tuberculosis, occupying an intermediate place in the series.

SYMPTOMS OF THROMBOSIS.—The symptoms of the onset of thrombosis were, in the majority of cases, slight and vague. In several it is recorded that, but for some slight œdema of the feet and ankles, there was absolutely nothing to draw attention to the state of the legs; and in one the œdema was so inconsiderable that it was not noticed at all

until the post-mortem examination. In some instances the symptoms were rather more pronounced. Pain once was so severe as to cause considerable distress and disturbance; it was referred to the upper part of the popliteal space where there was tenderness to pressure. Within a few hours of this it was reported that there was œdema of the ankle; and two days later the pain had spread up and down the leg along the course of the veins, and a rounded swelling had formed over the situation of the popliteal vein. This swelling at the end of a week subsided.

One patient still in the hospital, who is not included in my table, suffered from a pricking pain in the calves of both legs on attempting to rest them on the floor; there was at the same time tenderness in this situation. About three days later swelling of the feet began, and the pain in the calf became much more severe, and dilatation of the superficial veins became marked. The symptoms were more intense upon the left side. The thrombosis has now lasted three weeks. The patient is the subject of advanced phthisis, presenting the features insisted upon in the clinical section, and is rapidly sinking.

A second patient in a similar condition, still under observation, is suffering from thrombosis of five weeks' standing, double, but of older date in the right leg. The first symptom in this case was œdema, which was followed by pain in the course of a day or two.

Pain seems to have been present either spontaneously or on pressure in rather more than half the cases. In some instances it has undoubtedly preceded the œdema, but only as a rule by a few hours; and in some the pain and œdema appear to have developed almost simultaneously.

The occurrence of thrombosis was not marked on the temperature chart by any constant or noticeable feature, and the subsequent course was variable. In one instance, in which there was much pain preceding the swelling by a few hours, the temperature began to rise about the fifth day after the first symptom, and for the next six or seven days maintained a more evenly elevated height than had previously been recorded.

NATURE OF THE PROCESS.—In this last case, at all events, it is reasonable to suppose that there was phlebitis. In the paper referred to above¹ we have laid considerable stress upon the fact that a considerable degree of inflammation may exist in the peritoneal cavity, and that actual perforation may occur with very slight and vague symptoms. The asthenic condition of phthisical patients diminishes the reaction to severe lesions, hence, though the symptoms of phlebitis were not typical, still we are justified, considering the state of the patient, in confidently assuming its presence. The same reasoning, however, will not entitle us to admit its presence in those cases in which we are told there was no pain at all. Probably, if every case of thrombosis were carefully examined there

¹ Fenwick and Dodwell: "Perforation of the Intestine in Phthisis," *Lancet*, July, 1892.

would be few in which there was not some tenderness on pressure over the seat of the obstructed vessel; and it is permissible for us to suppose that there was a certain amount of inflammation in the coats of the vein in these.

We, therefore, conclude that thrombosis is usually associated with phlebitis; but that it is possible that in a few instances phlebitis may be absent.

The question arises, Is the thrombosis primary and the phlebitis secondary, or are there some instances in which the thrombosis is the sequence of phlebitis? Now, in all, or nearly all, the recorded instances of pain and œdema, we have seen that these two symptoms are either simultaneous or that the œdema followed the pain by a few hours only; that, in fact, the œdema occurred at too short an interval after the pain to have been due to the condition causing the pain. In the case previously recorded in which there was tenderness in the calves for three days before the onset of the œdema, there was an exception to our rule; but it is quite possible that thrombosis followed by phlebitis had occurred in some branches in the calf, too small to produce œdema, but capable of causing pain. Further, there is no case recorded in which pain and swelling over the seat of the vein itself (*i. e.*, a definite case of primary phlebitis) has preceded the œdema. Although, therefore, it cannot be proved, yet we may accept it as probable that in all cases the process is a primary thrombosis, and that phlebitis when present is secondary.

PRIMARY SITUATION.—It has been stated that the primary situation of the thrombosis in the veins of the lower extremity is not always evident. In a few cases it appears to have been the saphena or a muscular branch of the femoral. In the case D., referred to above, the process apparently began independently in the saphena and branches of the profunda.

In others, and more frequently, the origin appears to have been some of the popliteal or posterior tibial veins. In the case C., above, it was clear that in the right leg the initial lesion was in the two muscular branches in the calf, spreading from there to the posterior tibial. In the left leg several independent and separate centres existed from which clot was spreading. Agreeing with the pathological records, the clinical notes fix the primary seat of pain more frequently at or below the knee than above. The arrangement of the veins below the knee serves to explain the late appearance of œdema where they are primarily affected. For, whereas the popliteal artery is normally accompanied by a single vein, below the lower border of the popliteus muscle the veins are double, *venæ comites* with free communication with one another; in addition to this, there are numerous superficial and muscular veins of small size opening into the various deep veins of the calf and into the popliteal. There is, accordingly, a free communication between veins of small size, which

would tend to delay the onset of œdema by providing for collateral circulation until a trunk of some considerable size is obstructed.

The greater frequency of the lesion upon the left side is probably due to anatomical reasons. The veins of the lower extremity are farther from the central organ of circulation by the difference in length between the right and left common iliac veins. With the exception of the greater length of the left common iliac, and its slightly different direction, the conditions on the two sides are the same.

PATHOLOGY.—Coagulation of blood in a vein we know to be due to a number of causes, but in the present paper two only need be considered—namely, stagnation of the circulation, and alteration in the inner coats of the vessels. Ante-mortem thrombi in the ventricles of the heart are familiar enough, and it would seem reasonable to suppose that if these can form in contact with the endocardium they would also do so in the veins. Without denying that this may be true, I should like to point out that the conditions in the two cases are not quite the same. The irregularities formed by the columnæ carneæ and musculi papillares are much more favorable to the formation of clot than the uniform surface of the inner coat of a vein, especially if there be dilatation of the ventricles and degeneration of the myocardium. The only conditions in the veins, comparable to those of the surface of the endocardium, are the venous valves—and it is possible these are the starting-points for coagulation. On the other hand, there is much to urge in support of the theory of stagnation as the primary cause. The patients were in all the cases confined to bed, but they had all become considerably emaciated and reduced in strength by a variety of conditions. High night-temperature we have seen was the rule, and this, with profuse night-sweating present in nearly all, had tended to weaken the force of the circulation. The recumbent position in bed, with absence of muscular action to aid the flow of blood in the veins of the lower extremities, also acts in the same direction. Added to this is the fact that the majority of patients suffered from ulceration of the intestines interfering with digestion and leading to exhaustion by continued diarrhœa. We are familiar also with the apathetic condition of many phthisical patients, causing them to maintain some one position for long hours together.

Against this view, however, we may suggest the following. Many of the charts have exhibited periods during which the temperature has remained continuously elevated. This may be explained either by supposing some unusual activity on the part of the tuberculous process, or by a view which appears more likely at this stage, namely, that absorption of toxic substances is taking place within the respiratory or intestinal tract. If such be the case, we have a condition very like septicæmia. Now, one feature of septicæmia is the occurrence of subcutaneous and submucous hemorrhages, evidences of alteration in the quality of the

blood, in the vascular wall, or in both. We have only to imagine a similar alteration in the wall of a vein brought about through septic absorption, together with an enfeebled state of the circulation due to causes already enumerated, and we have produced a condition most favorable to the supervention of thrombosis. In septicæmia we have an acute process, accelerated circulation with alteration in the vessel walls leading to extravasation; in phthisis, a more chronic state with enfeebled circulation tending to thrombosis.

The character of this supposed change in the venous walls I am quite unable to explain; it is possibly one of a degenerative kind, more liable to occur in the veins than in the arteries, owing to the slower passage of their contents. It is thus claimed that thrombosis, in these cases of phthisis, is different from that arising in simple debility.

In acute phthisis—of which I have no instance in my records—thrombosis is recorded, but it is far less common than in other forms. (Wilson Fox, *op. cit.*) This, perhaps, is due to the fact that many of these cases resemble acute pneumonia in having a full and bounding pulse, and in the fact that when death supervenes it is by rapid failure of the cardiac or respiratory system. It may also be explained by there being less formation and absorption of decomposition products within the lung. In chronic phthisis thrombosis may certainly occur, but it is not likely to do so unless the course of the disease assumes the subacute form.

Some theory such as the preceding seems needed to explain the far greater frequency of the phenomenon under discussion in the middle class of cases than in either of the others.

ETIOLOGY.—The causal relations of the malady have been sufficiently indicated in the previous sections: it only remains briefly to enumerate the characteristics of the cases in which it occurs.

The patient is usually under middle age and the subject of advanced phthisis, presenting a high temperature with a tendency to become continuous.

He will probably be the subject of intestinal and laryngeal mischief, and be considerably reduced in weight and strength, with a feeble circulation. In all likelihood he will be apathetic, lying long in one position. The position assumed possibly affects the side first affected, but of more importance is the difference in the anatomy of the veins.

DIAGNOSIS.—The recognition of the condition is very important, and though, sometimes attended with some difficulty, is usually sufficiently easy.

The importance is exemplified by the frequency of secondary emboli; the occurrence of these constitutes a serious danger and may cause sudden death.

Though it is impossible to bring about absorption of the clot, its effects may be diminished, and the suffering of the patient much relieved.

The chief conditions in which a differential diagnosis has to be considered are:

1. Simple position-œdema from feeble circulation.
2. Œdema due to cardiac or renal disease.
3. Œdema due to pressure upon a vein from new-growth or enlarged glands.
4. Peripheral neuritis with œdema.

The important features in the thrombosis under discussion are: The symptoms nearly always begin in one leg first, or are much more marked upon one side than upon the other. The œdema begins below and spreads upward; pain is at a different level from the œdema and follows the course of the veins. The surface of the limb soon assumes a white, waxy appearance marked by dilated superficial veins, which occasionally may themselves be felt to contain clot. The occurrence of unilateral œdema in a patient suffering from advancing phthisis should give rise to suspicion; and if there is tenderness over the situation of the veins and dilatation of superficial veins the diagnosis is practically certain.

Simple œdema from feeble circulation may be recognized by the fact that it is double, and equal on the two sides, that there is no tenderness to speak of, and that it subsides on the patient lying down.

Œdema from cardiac or renal disease will be accompanied by the usual signs of these affections, will be symmetrical, and lacking in the characteristic features mentioned above.

Pressure upon the main vein, *e. g.*, the common or external iliac, or the femoral, may give rise to all the symptoms of thrombosis—unilateral swelling, dilatation of veins, with some amount of pain. Search must be made for any abdominal tumor or enlarged glands, and the situation of the main vein gently palpated to discover any obstructing thrombus. The discovery of either of these may clear up the mystery, but there may occur cases in which a correct diagnosis is very difficult.

Pressure upon the inferior vena cava, causing œdema of the legs, will probably not lead to error. The presence of ascites and the enlargement of superficial abdominal veins would suggest some other cause than femoral obstruction.

Peripheral neuritis with œdema, a rare condition in phthisis, may simulate thrombosis; in this, however, the situation of the pain and œdema will be the same, and usually in the extremity of the limb; tenderness, if made out, will be over the course of the nerves and not the veins, and the superficial veins will not present the marked dilatation present in thrombosis. The lesion in peripheral neuritis will be much more probably symmetrical than in that of venous obstruction.

The diagnosis in this latter affection is rather from primary phlebitis; and careful testing of sensation in the part will aid considerably the distinction.

PROGNOSIS.—The shortest recorded interval between the onset of the symptoms of thrombosis and the fatal termination was twenty-four hours, in the case of obstruction in the left common iliac mentioned above; the longest interval was five and a half weeks. The evidence in this direction is, however, scanty, since the notes frequently fail to fix the date of the occurrence. The majority of recorded instances took place between the sixth and sixteenth days before death. Although cases occur in which thrombosis supervenes in quite an early stage of phthisis, it must be more or less a coincidence, and not dependent upon the causes mentioned in the present discussion. And it must be a rule with but few exceptions, that after its occurrence the duration of life is a matter of days. The effect of the interference with the proper return of the circulation, the discomfort and frequently the pain, in addition to the risk of cerebral and cardiac embolism, must be to shorten life. The discovery, then, of venous thrombosis in a case of advancing phthisis should be a warning that the fatal event will probably occur within three weeks.

TREATMENT.—On the first indication of the supervention of thrombosis, absolute rest of the affected member should be strictly enjoined and, as far as possible, maintained. In moving and raising the patient in bed, when necessary, care should be taken to manipulate as little as possible the situation of the obstructed veins. These precautions are to be observed with the view of diminishing, as much as possible, the risk of detachment of fragments of clot. Gentle constant support, in the form of a bandage over cotton-wool from the toes upward, will give relief and aid in checking the œdema, and at the same time will help to keep the limb warm. Where there is much pain over a vein, nothing is so good as painting the skin with glycerin and belladonna, and applying over this hot flannel fomentations; as a rule, this gives almost immediate relief and opiates are seldom required. Sleep may be interfered with, but the indications and contra-indications for hypnotics are part of the general treatment of phthisis. It will probably be found advisable in all cases, whether there be pain or not, to apply heat in the form of fomentations, which should not be too thick or heavy, as by this means the superficial vessels are dilated and collateral circulation assisted.

DRY ASEPTIC OPERATING.

By M. H. RICHARDSON, M.D.,

VISITING SURGEON, MASSACHUSETTS GENERAL HOSPITAL; ASSISTANT PROFESSOR OF ANATOMY,
HARVARD MEDICAL SCHOOL,

AND

J. G. MUMFORD, M.D.,

SURGEON TO OUT-PATIENTS, CARNEY HOSPITAL, BOSTON.

THE subject of the dry treatment of operation wounds has been handled by many writers, as well as by the authors of this paper, but this treatment is still infrequently employed, and an intelligent conception of the principles of the method is by no means universal.

At the root of the matter lies the vital distinction between antiseptic and aseptic surgery.

In a word, antiseptic surgery depends on the conception that bacteria are everywhere present—in the wound, in the air, on the patient, on the operator and his whole armamentarium—and that these bacteria can be met and resisted only by the constant use of active germicidal agents. Antiseptic methods, from the original Listerian process down to the simple creolin douche, are familiar enough to all surgeons, and many of the methods are still constantly seen in common use. That they have been an immense advance on anything previously known is unquestionable; and the result, as in the more recently introduced antiseptic midwifery, has been a remarkable decrease in surgical mortality and a great shortening of convalescence.

In spite of these advantages, however, it is a common experience that all the wounds so treated do not heal kindly. Though the greatest care be used, stitch-abscesses are not uncommon, slight pocketings of pus are sometimes found; there is nearly always a slight primary fever—which we were once taught to consider physiological—and many other inconveniences arise, which the surgeon is apt to lay to some unrecognized error in technique, and seeks to remedy in his next similar operation.

One prime difficulty in trusting to the use of antiseptic lotions is the blind over-confidence and credulity they inspire in the assistants and nurses, if not in the surgeon himself. Who is not familiar with the observation, "Oh, yes, my hands are clean; I have dipped them in corrosive." This faith in corrosive, the "magic water," has been the source of more unexplained contamination in the employment of antiseptic methods than, perhaps, any other one thing; though at this day it seems almost superfluous to state that hands cannot be sterilized by simply washing them in a corrosive sublimate solution.

In spite of all that has been attempted, by the use of various washes,

to make the hands aseptic, that much-desired object has never yet been absolutely attained, as it seems impossible to reach the organisms which lurk about the nails and in the deeper layers of the skin. We may, however, by prolonged mechanical and chemical cleansing, approximate toward the desired result, whether we use subsequently an aseptic or antiseptic treatment of the wound itself.

The distinguishing feature of the antiseptic method, however, lies in the attempt to purify the open wound, and it is the futility of this attempt that we wish to demonstrate in a few words.

Believing, as the operator does, that his applications will leave behind a clean wound, he brings these applications in contact with the cut surface in every conceivable manner. His hands, fresh from a bichloride solution, handle the tissues; his instruments, dripping with carbolic acid, touch the fresh surface; he mops up the blood with his bichloride sponges; and when the operation is completed he washes out the wound with an antiseptic lotion.

The immediate effect of all this is to bring into contact with the tissues a strong irritant—usually a more or less violent poison—which not only produces undesirable local changes, but subjects the patient at times to the serious dangers of systemic absorption. The action of these irritants is unquestionably germicidal, but the tissues involved are never left in the best possible condition for prompt healing to take place. A certain amount of chemical reaction occurs, an albuminate is deposited, and the possibility of active phagocytic co-operation in the healing process is interfered with. The result is that detritus and other chemical compounds must be either absorbed or discharged before union can be effected. Be it understood that this discussion relates, of course, to cases where a primary union or a clean wound is dealt with. For these reasons drainage has been, and must continue to be, an important adjunct to the antiseptic method, as there must be discharges of blood and detritus from such a wound to facilitate its speedy union. It is unquestionably, then, the presence of this detritus in the wound, a certain amount of which is unavoidably absorbed, which causes the primary or absorption fever with which we are familiar; and this clearing up of the ground must anticipate any deep, solid union, even though the skin incision may show a "first intention."

The secondary disadvantages of this state of the tissues are not far to seek. Given an unhealed and sluggish wound, the presence of a drainage-tube, and a field or medium difficult or impossible of absolute sterilization, and the occasionally resulting septic process cannot be a matter of surprise.

The logic of the aseptic treatment is so obvious, and its practice so uniformly successful, that its position and adoption are constantly becoming more assured.

The use of antiseptics cannot, of course, be done away with, but must be limited to the ante-operative period entirely; for the blood and deep tissues being comparatively free from pus-producing organisms, it is evident that if these organisms are not introduced during the course of the operation, there will remain no necessity for an attempt at their extirpation. The whole endeavor of the surgeon, then, must be to approach his operation in an absolutely sterile condition, with sterile instruments, and to work in a sterile field.

The minutiae of this preparation have been so frequently given that an elaborate description seems here unnecessary. Suffice it to say that sterilization by heat is the only sure and efficient method, so far as the use of heat is applicable. Dressings, instruments, sponging-gauze, sutures, and ligatures may be so prepared. There remain, then, the hands of the operator and the skin of the patient. On these, shaving, scrubbing, and the long application of sterilizing solutions, followed by boiled water, must be employed. It is a regrettable fact that these parts cannot be rendered absolutely aseptic, but clinically it appears that the number of pathogenic bacteria can be so materially diminished as to render their presence in the tissues a matter of no practical importance.

Bearing constantly in mind, then, that the skin is a possible source of infection, its contact with the exposed wound should be constantly guarded against.

It is a wise precaution to use a second knife after the skin incision is completed.

The hands of operator and assistant should never come in contact with the wound when such contact is avoidable. This precaution is not so difficult to follow as might appear, and the use of sterilized gauze wraps in handling flaps and coarse tissues is easy and practicable. Even in the application of ligatures, the fingers can often be held clear of the tissues, and torsion may be used to control small bleeding-points. By this method, however, the wound will at times be brought into indirect contact with the hands, through ligatures and gauze strips which have been grasped by the fingers. While this is theoretically undesirable, practically the danger of indirect germ-transference is very slight, and may be disregarded. Occasionally we have avoided handling the gauze by using forceps instead of fingers. Except in operations where excessive, not to say unreasonable, care is necessary—as in opening the knee-joint—this precaution seems superfluous.

Perhaps the most valuable procedure, however, in the aseptic method is the use of dry packing and sponging, and it is to this procedure—so easy, so practical, and of such obvious advantage—that we wish to call special attention.

The writers have for the past two years abandoned the use of sponges of any kind. The old sea-sponges were long ago given up, and even the

more rational gauze-wrapped wool sponge has been superseded. The practical objection to these sponges is that the former can with difficulty be sterilized, the latter are not sufficiently absorbent, and both varieties must be washed and used a second time during the operation, usually. The success of the whole procedure of dry treatment would thus be jeopardized. Wet sponges mop up the discharges, but do not check hemorrhage, and this fact must not for a moment be lost sight of. It is on the use of dry sterile gauze that the proper treatment of the wound depends, and this material must be of an absorbent quality, soft and free from grease. In practice, the familiar Clapp's gauze has been found admirable.

This is simply prepared. A bundle of it is made up, cut in strips of suitable length, from six inches to a yard, and in number from ten to fifty. The bundle is wrapped in a towel and exposed to concentrated steam-heat for an hour. The moist bundle is then dried by being placed in a warm oven for a few minutes, and is ready for use. Gauze so prepared has experimentally been found sterile after a week. The advantages of the steam sterilization are that it is more speedy and the material remains soft and pliable. There is no danger of its becoming rotten and frayed, as after prolonged exposure to a high, dry heat. Even when not dried in the oven the gauze loses its moisture quickly when exposed to the air, so that this rapid-drying process may be omitted at discretion.

Many surgeons have these gauze strips turned in at the edges and made up into small pads. This is according to the individual fancy, but is certainly a great unnecessary trouble. The unturned edges fray but little, and the few sterile particles of lint have never been found to disturb the healing of the wound.

The use of these dry gauze strips during the operation differs essentially from that of sponges. Instead of mopping we tampon. So far as the free use of the knife will allow, the cut surfaces and edges are packed rapidly with gauze, which is left behind as the surgeon advances. All vessels except those of considerable size are thus controlled, the large bleeding-points being caught, of course, by pressure forceps.

The result is that when the work of the knife is concluded, the wound remains securely tamponed. The gauze must then be held firmly in place for a few minutes, and on its removal a clean and absolutely dry wound is disclosed. Torsion and a few fine silk ligatures complete the hæmostasis absolutely.

The stitches should now be placed at once, without any further attempt at mopping or washing. If the operator prefers, he may place his sutures before removing the gauze, but this is usually unnecessary, and often objectionable, as the subsequent dragging out of the tampon may bruise the surface and start up fresh bleeding, which is not so likely to occur when the packing is gently lifted out.

It is obvious that the fresh surfaces are now most advantageously prepared for an immediate union. More properly, the advantage lies in the lack of preparation. No chemical remains, no detritus is present, but natural processes, uncomplicated, are allowed to complete the healing.

It is not only in clean operation wounds that this dry method is of value, but often in purulent, tuberculous, and septic cases it is advantageous. As is well known, the thorough curetting and packing of abscess cavities is often followed by rapid healing.

After the excision of tuberculous glands, joints, and tendon sheaths, the same treatment is of use, without strong antiseptic irrigation, as the recuperative power of an enfeebled environment is not thus unnecessarily interfered with.

A most valuable and interesting application of the dry treatment is its use in abdominal surgery. The writers have used these gauze strips in the abdominal cavity in a long series of cases. Their value, especially in tamponing for obscure intra-pelvic hemorrhage, is striking, and has been previously commented upon in detail.

In septic peritonitis, long gauze wicks are of obvious advantage at the time, though the probability of troublesome peritoneal adhesions subsequently is not to be lost sight of. The gauze must here be early and frequently changed.

In abdominal operations, where it is impossible to wall off the peritoneal cavity by suturing, as in operations upon contracted gall-bladder, or where it is desirable to provide for possible extravasations after intestinal operations—resections, anastomoses, and the like—gauze wrappings, wells, and drains applied in the manner frequently described in previous articles will commend themselves, upon trial, to every practical surgeon.

It is a very difficult matter, and outside the limits of this paper, to draw statistical conclusions in regard to this treatment in comparison with what may be called the wet treatment of wounds. The difference in mortality is slight, but the advantage on the side of the dry treatment lies in the greater rapidity of healing, the absence of complications, and the consequent greater comfort of the patient. These are matters of fact and observation, and hardly capable of demonstration by tables and data.

In the past twenty-six months the private practice of the writers has included 130 aseptic major operations—that is, involving healthy tissues only. Of these, one did badly.¹ This was a case of double pyosalpinx, aseptic in so far as the tubes were removed without apparent rupture. The abdominal wound failed of primary union, but the patient eventually recovered, and is now perfectly well—two years after the operation.

¹ See Boston Medical and Surgical Journal, 1892, vol. cxxvii. p. 421.

This list comprises 32 breast excisions, with axillary dissection; 44 abdominal operations (including 14 ovariectomies, 4 cholecystotomies, 1 pancreatic cyst, 2 extra-uterine pregnancies, 1 nephrectomy, 4 hysterectomies); 2 amputations at the shoulder-joint; 2 of thigh and 2 of leg, and 1 of forearm; and a dissection of 19 large tumors in different parts of the body, with 27 miscellaneous operations. For obvious reasons all pus cases, including appendicitis, caries, etc., are excluded.

Since the adoption of the dry treatment we have found that the convalescence of our patients is much shorter.

After excision of the breast and axillary glands many patients go home in from ten days to two weeks, instead of in three or four weeks, as formerly. After amputations of the leg the convalescence lasts from seven to twelve days; after clean abdominal sections, two weeks; and minor operations in proportion.

In these statements the writers lay no claim to unusual or especially brilliant results, but feel that a procedure which has been so unquestionably successful in their hands, as compared to their own previous methods, must recommend itself favorably to the notice of many practitioners to whom these measures are not as yet familiar.

ASIATIC CHOLERA.¹

BY CHARLES A. LEALE, M.D.,
PRESIDENT OF ST. JOHN'S GUILD, NEW YORK CITY.

WITHIN the past three months the inhabitants of the entire Western hemisphere have been in dread of an invading foe, capable of destroying human life, depreciating property, and curtailing the commerce of the world. Its dread has caused the President of the United States to issue a special proclamation of prolonged quarantine of individuals and merchandise coming from infected ports; and laws have been so stringently enforced that immigration has been temporarily checked; and the vast hordes of thousands of the offscouring of Europe have had their journeys diverted to other countries, and the people of the United States have awakened from their long slumber of the past twenty years, to consider the problem of protection against the greatest danger that threatens our nation.

I speak not from hearsay and belief, but from actual observation, when the inflowing was the greatest at the United States Immigration Bureau at Ellis Island, New York. During the same time the Governor

¹ Read before the New York County Medical Association, October 17, 1892.

of the Empire State, with his wealth and military power, has enforced his order to compel quarantine on a distant sand-bar; and the Mayor of New York City, through the Health Department, has made preparations to meet and promptly annihilate the threatening enemy.

What is the enemy? what is its name? and whence does it come? how does it act? and how may we best conquer it? are questions to which medical men can respond.

It is called *Cholera Asiatica*—a misnomer, either for the noun or the adjective.

In the biblical history of the creation one of the first acts of Adam was to name all his surrounding animate objects. One of the most difficult duties of the physician is to give a name to a disease. The subject before us is known as cholera Asiatica, and its synonyms are so numerous that their simple enumeration would only increase our confusion.

Cholera, from the Greek, signifies a flow of bile—or, as in the Latin, a bilious disease—just as indefinite and inaccurate as when completed by the addition of Asia, the name applied to seventeen millions of the fifty-one millions of square miles of land, or one-third of the whole of the dry land on the surface of the globe. We, therefore, see that the name *cholera* is neither accurately descriptive, nor does *Asiatic* define, as the larger portion of Asia is as free from the disease as much as is the American continent.

Now that we have accepted the name, we first ask: What is the cause of the disease? And, in accordance with one of the first principles of our profession, we accept the accumulated evidence of those most honest in their researches, and of the most eminent investigators of the cause of the disease.

From a study of their labors, with the deductions drawn from my own personal examinations of the stomachs and intestines of those having died of this disease, I believe that Asiatic cholera is directly due to the introduction of the spirillum cholerae Asiaticæ into the gastro-intestinal canal. If these bacilli enter by way of the stomach, and the gastric secretions be normal, then the intense acidity of the gastric secretions destroys all bacilli, and very slight impression may be produced upon the health of the recipient; but if the secretions of the stomach are not in their healthful, intensely acid condition, then the bacilli may multiply with great rapidity in the stomach, and, as I have often observed clinically, the first symptom is a painless eructation of the contents of the stomach, soon to be repeated by frequent vomits of almost clear, rice-watery discharges. My experience with these is that if not promptly treated such fulminating cases will quickly be exceedingly severe, and within a few hours prove fatal, unless prompt relief be afforded, as the entire thirty-three feet of the gastro-intestinal

tract of the adult becomes at once a culture-bed for the rapid propagation of the cause of the disease.

But in cases where the bacilli may not have been entirely destroyed by the acid secretions of the stomach, and may have escaped down into the small intestines, where the secretions are alkaline, we have a second large culture-field, in which garden, also, the bacilli multiply with wonderful rapidity; then follows the diarrhœa and the effort of Nature to throw out the millions of offenders, which, either by their presence or by their toxic ptomaines, enter the blood, quickly affect the entire cerebro-spinal system, cause the nervous phenomena, and, secondly, act on the muscular system, producing the usual characteristic symptom of this disease.

Now we come to the third question, Whence comes this enemy? And to solve this question we turn to the labors of unselfish medical men, who have devoted many years of toil to give us an answer.

The devotion of Dr. John C. Peters, of New York City, to the solving of this problem of history in the Eastern hemisphere, and the diligent tracings of the spread of the disease in America by Dr. Ely McClellan, U.S. Army, deserve honorable remembrance, as they clearly prove that each epidemic has started in Hindustan, and, if not checked, has thence travelled in all directions, to China, Japan, Russia, Africa, and Europe, then crossing the Atlantic and spreading from our seaport towns in all directions—north into Canada, west to our Pacific coast, and south even into South America; and an American physician has abundant evidence to prove that its virulence is as great on the plains of our Western prairies as in its original haunts in Hindustan.

The next question that occurs to the thoughtful mind is, Whence did this bacillus originally come? Did it originate in the filth of the worshippers at Mecca, who always religiously defecate on the ground and who die by thousands from Asiatic cholera? Is the bacillus always present among the teeming inhabitants of India, whence each epidemic is supposed to start? The question of spontaneous generation has been claimed by some, but our evidence is almost conclusive that no amount of filth can originate a case. Our investigations lead to conclusions against a theory of spontaneous generation; we are, therefore, forced to answer that the cause of Asiatic cholera is always present in some parts of Hindustan, and only waits for favorable opportunities to start on its travels of destruction around the world. Yes! but when and how did Asiatic cholera originate in Hindustan? These are questions that are hidden mysteries, and we can now no more satisfactorily answer them than we can say when, where, and how man and all other living beings originated. But this disease thrives in filth, and is often called a filth disease, propagating in the culture-beds of pollutions of the soil or water. This is illustrated by the account of Dr. White, of Assam,

in the *Sixth Annual Report of the Sanitary Commissioner of the Government of India*, who writes: "The history of the outbreaks of cholera is the same in every case. A case of sporadic cholera occurs in a Hindu village; the patient is placed in the smallest and closest apartment of the house. A large fire is lighted, and as many people, friends and relatives of the sufferer, as the room will hold assemble and squat around him solely for the purpose of praying, as there is seldom, if ever, any attempt to administer remedies. The patient during this time is vomiting, defecating, etc., and the fomites of the disease must necessarily be carried off by the visitors to their crowded rooms and huts. After three or four days five or six new cases occur, and so on daily until it runs through the whole village or villages to which the persons first infected belonged."

Our next question is, How may we recognize Asiatic cholera, and must we delay a week or more until after a bacteriological examination proves the presence of the spirillum cholerae Asiaticæ before a correct diagnosis be made? To this I answer that, long before the bacillus was discovered by Dr. Robert Koch with the microscope, a positive diagnosis had been made by the keen sense and clinical knowledge of the acute physician.

No two individuals are exactly alike. No two leaves, even on the same tree, are identical in every line; there is a difference. So it is with disease: no two diseases present the same series of incubation, birth, growth, and results, with symptoms that we learn by observation, imparted or intuitive knowledge.

Several years ago I listened to lectures by Professor Richard Proctor on the "Power of Telescopes" and "Other Worlds than Ours." Since then we have been led by Professor Koch with his microscope to recognize minute animal forms, which are now designated by descriptions of their external forms.

One of the strange facts in regard to Asiatic cholera is that after a very short duration it ceases to exist outside of Hindustan. The epidemics extending to Northern Asia, Europe, and Africa, after destroying thousands, cease just as suddenly as they began: although in many places planted in some of the most prolific soils of human filth, cholera does not long survive a removal from its original home.

Asiatic cholera epidemics are of short duration in America, generally terminating in two years. Why it does not lurk in the filthy dens to which it has been introduced, but instead, after a brief season entirely disappears, is at times difficult to answer. Why, after a large forest fire, is the new growth of trees entirely different and often of a variety never before seen in the region? They have apparently grown as Topsy grew; still, the germs may have been conveyed either by living beings or on the feet of birds, or wafted by the winds to their destination.

But Asiatic cholera, outside of Hindustan, appears only as an epidemic, to come, destroy, then pass away. How do we account for such action?

The study of epidemics and their appearance, results, and disappearance, tax the most brilliant, acute, and laborious efforts of man, and all the diligence of faithful observers has not yet given us satisfactory conclusions in regard to the propagation, life, and death of Asiatic cholera.

Surgeon-General Cunningham, after a residence of a third of a century in British India, has ideas entirely at variance with many of the scientists who have studied the disease outside of its native haunts. Again, the meteorologist skilled in the science which treats of the atmosphere and its phenomena, particularly of its variations of electricity, of heat, and of moisture, of its winds, storms, and the chemical constituents of its atmosphere, with the minute living beings which it contains, after patient investigation thinks that he has reached definite conclusions, that are no sooner promulgated than they are dashed to the ground by the believers in human portability only.

Meteorology can easily explain why Asiatic cholera has been known to suddenly appear on board ship in mid-ocean, and when no known human portability could have occurred, by that well-marked type of whirlwind known as the dust-storm of India. This may assume the form, according to A. Buchan, of a tall, aerial column moving onward, and drawing into itself, as it whirls around in its course, dust and other light bodies within the sweep of the strong air-currents which blow along the surface of the ground and converge vorticosely round the base of the column. It can easily be understood how these dust-storms may have passed over a country where the soil contains millions of the bacilli of Asiatic cholera, these being thus wafted in clouds to mid-ocean or to other regions remote from any possibility of their conveyance by human means.

Even the astronomers have had their notions regarding the etiology of infection, and some have asserted that the appearance and disappearance of spots on the sun affect the atmosphere of the earth, and thereby originate epidemics. The ancients firmly believed in the influence of the sun, moon, planets, and stars to cause disease, as did our American aborigines, the Indians, who saw God in the skies and heard him in the clouds.

The more man knows, the more ignorant does he discover himself to be, and that there is no end to knowledge; but woe to the physician who seeks solace in answering these problems by psychology: he will find that he has entered chaos.

The history, statistics, and bibliography of Asiatic cholera, by Dr. John S. Billings, U. S. Army, covering 315 closely-printed pages of octavo, clearly demonstrate that the pen of the ready writer has been

kept moving for over two hundred years. For the summer of 1892, since the threatened extension of the epidemic through Europe and thence to America, the medical journals and the secular press have issued more printed material relating to cholera than would fill the shelves of a large library. Why? Because much is still obscure, and the dogmatic assertions of the larger number of writers are found to be wanting when weighed in the balance of accumulated experience concerning the phenomena of changing and varied epidemics.

The sanitarian, who claims that he can obliterate the disease, finds a great difference in his results if he commence at the outbreak of the epidemic, or if he, with tact, wait until the violence of the disease has exhausted itself. The physician who endeavors to prove everything by the results attained in his own restricted locality, forgetting the combined universal experience of others, is combated with the evidence that even in Hindustan, where soil-pollution is general, where there is slight regard for the laws of health, and where the same diseased clothing is continuously worn, epidemics suddenly cease. The history of the outbreaks of tuberculosis, syphilis, measles, smallpox and scarlet fever in America, and among the inhabitants of the more recently discovered Hawaiian Islands, clearly prove something in regard to an acquired power of tolerance of the human family for all diseases. This appears particularly true of Asiatic cholera, it being found that a very small proportion of those who have been long attendant upon cholera patients acquire the severe form of the disease.

Physicians, nurses, and attendants must carefully avoid any cause of acute indigestion. During the epidemic of 1866 I sent a young, vigorous woman, the wife of a patient who was just convalescing from a severe attack of cholera, to procure peaches for her husband. She ate ten peaches, skin and pulp, immediately contracted the disease, and died within twenty-four hours.

It was only after two months of almost continuous contact that I had a slight attack of cholera, which was promptly overcome by treatment. I had for days and nights remained for many consecutive hours at the bedsides of those suffering the fearful pains of the collapse stage, where sudden and involuntary vomitings sent the contents of the stomachs over everything within reach, and the rice-watery discharges from the bowels saturated the bedding and covered the floor of the sick-rooms. Everything was filthy and contained pollutions. Five minutes after the patients had been washed and had the entire clothing changed, a recurrence of the sudden vomiting and purgings made all their surroundings as polluted as before. I have had a volunteer nurse working at each arm and leg to control the agonizing cramps, which is best done by alternate circular compression. The dust of the apartments must have been loaded with the dried *spirillum cholerae Asiaticæ*, and on many days

I must have taken thousands of the bacilli into my stomach. Among those coming in contact with one of my cases that recovered after having been in collapse for three days, nineteen individuals contracted the disease, three of whom died within forty-eight hours after the appearance of the first symptoms. One, a boy, died within seven hours from the time I had seen him playing with marbles on the street.

I have seen the profound collapse stage of cholera last for three days, and yet recovery followed. In this condition there are three prominent sources of danger, viz :

1. The profound impression produced on the nervous system by the ptomaines, which may cause sudden paralysis and death.

2. The great loss of the serum from the blood by the excessive vomitings and the discharges from the bowels, causing thickness of the blood and mummification of the soft parts of the body. In this condition death may ensue from the inability of the heart to continue the circulation of the blood, the impossibility of maintaining the necessary bodily heat to retain vitality, causing death by the paralyzing effects of diminished temperature (with sensations of freezing).

3. The intense pain of the muscular cramp, which may extend to all the voluntary tissues and cause death by exhaustion.

We have, then, these prominent symptoms pointing to the methods of death from Asiatic cholera; accordingly, knowing our enemy, we seek in our treatment to prevent the work of destruction. Where the physician is called during the premonitory stage of the disease, he is able to save nearly all those intrusted to his care; but he ought to keep them under continuous observation for at least three days.

The first symptom is an abnormal secretion of the glands of the mouth and stomach, causing a disagreeable taste, due to the entrance of the bacilli through their ducts into these glands; this is soon followed by nausea and eructations of gas from the stomach. In a few hours, if unrelieved, there follow easy vomitings, simply eructations of the contents of the stomach, which increase in violence until cramps of the stomach ensue, soon followed by violent spasmodic pains in the small intestines, then a discharge of all the fecal contents of the bowels, after which the painless diarrhœa of simply the exuded serum of the blood, heavily charged with the exfoliated epithelium from the lining of the intestines; this, if continued longer, becomes of a light-brownish hue, colored by the exudated blood and changed in color to the brown by the gastro-intestinal secretions.

The cramps of the muscles of the lower extremities now occur with great severity, and frequently last until the patient becomes so exhausted that death is apparent. I have often heard non-professional bystanders exclaim during this stage of the profound collapse, "He is dead," and their error has been the cause of the assertion that many cholera

patients are buried alive; but the physician easily detects the feeble action of the heart; and often, by renewed action, rubbing of the extremities always in the direction of the flow of blood through the veins toward the heart, and by the application of dry artificial heat, he is able to restore vitality, and in a few minutes be rewarded by hearing the husky, sepulchral voice of the invalid, who thereby demonstrates his return to consciousness.

We have yet life, but the spark of vitality is so feeble that the greatest caution in all respects must be observed, or this little flickering flame will be extinguished.

For the fulminating cases, where the patient turns black in an hour, where the vomiting and purging are almost continuous, where the pain causes this disease to be one of the most terrible to witness, we must have our patient in the recumbent position, surrounded by dry artificial heat, maintain repose of body, guard the heart by preventing undue fatigue, and supply the blood with its lost constituents.

How is this last to be accomplished? By transfusion of blood or any liquid into the veins? No, never. Because nearly all would be killed by the operation itself, and because we have a much more sure and easy method.

Shall we try hypodermatoclysis, the introduction of large quantities of sterilized solution of sodium chloride? No, never. Because you endeavor to promote absorption in a strange tissue when you have a much more ready and simple method, and as Nature does it.

Shall we feed our patients on an abundance of ice, or give profuse drinks of water very much lower than the temperature of the body? No. Because one of the greatest dangers of the collapse stage is lowered temperature.

By the stomach or rectal tube we may easily flush the gastro-intestinal canal with warm mutton-broth, or a solution of sodium chloride and egg albumen. For ten days I made daily examinations of an abundant secretion of urine with the late Dr. Austin Flint and Dr. Purple, in a case of gastric ulcer nourished by rectal alimentation only, no food or liquids having, during all this time, entered the stomach.

Nervous prostration, exposure to cold, moisture, improperly cooked food, bad air, and sea-sickness, when combined, are strong incentives to produce derangements of the entire gastro-intestinal track, ending either with diarrhœa or constipation. The diarrhœa of this condition, preceded by or accompanied with loose watery discharges from the bowels, soon assumes most of the grave symptoms of cholera nostra, and may prove fatal in a few hours if left unattended. Such conditions may be found in any large collection of ocean passengers, and may lead to an error in diagnosis, and, under the assumption that the disease may be Asiatic cholera, all the passengers may unjustly be subjected to unnecessary

quarantine detention. I am well aware of the great difficulty of a differential diagnosis between cases of this rapidly fatal cholera nostra and those of Asiatic cholera.

Never was New York more in danger of the spread of Asiatic cholera, had it gained free access, than during the months of July and August, 1892. One day the registrar of the New York City Health Department, Dr. John T. Nagle, recorded the deaths of 144 children under five years of age, which is exactly one death of a child every ten minutes. During that same time Dr. John H. Hinton, as chairman of the Seaside Hospital of St. John's Guild, had at one time over 200 resident patients at our Seaside Hospital for Children. At the same time Mr. John P. Faure, chairman of our Floating Hospital Committee, had on one day, under the care of physicians and nurses, 1497 sick infants with their mothers.

The heat of that week was terrible; not in twenty years had there been so many consecutively hot days in New York City. The population of this vast city panted for breath. Hundreds of adults and children, in their efforts to seek cool places, slept on the roofs and at the windows of tenement houses. The Croton water was too hot to drink as drawn from the hydrants, after running through miles of pipes, and but for the efforts of charitable citizens, thousands more would have died. The New York *Herald*, in the midst of this, saved many lives by originating and establishing a free ice-distributer among the sick worthy poor, and giving to the distressed cooling drinking-water.

It was at this terrible time that the principal diplomatic officers of the United States cabled warnings of the danger of Asiatic cholera, which had then spread to Northern Europe, and was prevailing epidemically in seaports from whence thousands of immigrants were weekly shipped to this country. The entire daily press extended its powerful influence to plainly present the danger of our permitting promiscuous immigration to continue; both President Harrison and Governor Flower thought the subject of such vast importance that its consideration was the chief topic for debate and action. The health officer of the port of New York, Dr. W. T. Jenkins, amidst many conflicting difficulties, maintained his authority, worked diligently, and with credit to his State; and Dr. Cyrus Edson, the sanitary superintendent, with his ten previous years of experience in the Health Department, was early and late on the alert to do his duty.

What has been the result? The powerful hand of the god of health has been raised, and the plague averted, with a loss of less than ten by death in a population of the three millions living in and near New York City.

But the critics tell us that, with all this work and great expenditure of money, Asiatic cholera did gain an entrance into New York City.

We acknowledge that it did, but we can assert that it was promptly annihilated, and that it is beyond human power to accomplish the unattainable.

Listen to the remarks of Surgeon-General Dr. John Murray, of London, at the International Medical Congress of 1881. He says: "The ravages of the disease have attracted the attention of governments in all parts of the world, and quarantine regulations are the result. We know from experience in India that absolute protection is unattainable; but we also know that relative exemption has been secured by restricted measures in the military stations and jails of India. The acceleration of transit by steamers and railways renders it very possible that cholera in its incipient form may be unconsciously conveyed many hundred miles; but there is no reason for admitting recognizable cases of diarrhœa and collapse into a country free from the disease."

How does Asiatic cholera reach America?

This question, I think, may be safely answered: Through commerce and the direct introduction of the cause, by means of polluted clothing, bedding of immigrants, or merchandise, such as the filthy rags and hair that have been gathered from the most dirty people, and regions of filth, squalid poverty, and starvation where cholera is present. These disgusting articles, undoubtedly containing the bacilli of many diseases, ought either to be sent back, destroyed, or thoroughly disinfected, and by better means than have as yet been employed by quarantine officials, while unnecessary pretexts, such as giving a daub of a solution of bichloride of mercury over the outside of the trunk of perfectly clean articles, ought to be denounced. If man has to resort to shams, he thereby expends a part of the power necessary to conquer the enemy.

REVIEWS.

THE ANATOMY AND SURGICAL TREATMENT OF HERNIA. By HENRY O. MARCY, A.M., M.D., LL.D., of Boston. Illustrated. Pp. 421. New York: D. Appleton & Co., 1892.

AGASSIZ was in the habit of advising his pupils to familiarize themselves with the history of their chosen science, not only before undertaking original work, but as a preliminary to the serious study of modern thought and teachings. Dr. Marcy and his publishers have rendered a service to the profession in reproducing the plates of Cooper, Scarpa, Cloquet, Bourguery, and others, which marked the beginning of scientific methods in the study of hernia, and have left but little to be added to the exposition of its anatomy. They combine historical and literary interest with much practical value and, it may be said, constitute the chief merit of the pretentious volume which contains them.

This is not to deny that there is a great deal of useful material to be found in its pages, but unfortunately there is a preponderance of matter that could hardly be so described. Certainly, throughout the book the voluminous quotations from Cooper, Morton, Cloquet, Pott, and others make the most interesting and instructive reading, while the equally extensive extracts from the recent discussions in surgical societies and from modern papers on hernia are selected and edited with so little reference to their relative value or to the position and experience of the surgeons quoted, that a tiresome mass of heterogeneous material has to be waded through in the search for information. This might be more excusable if the book were exhaustive, but it indicates a sad want of appreciation of the relative importance of subjects, to find a whole chapter of twenty-three pages devoted to the animal suture, and chiefly to the author's "buried tendon suture," which is exploited frequently and diffusely, while we search both index and text in vain for a satisfactory description of lumbar hernia, of properitoneal hernia, or Littre's or Richter's hernia, or Küster's "hernia inguino-superficialis;" find no section on diagnosis, and but very few and slight references to that subject scattered through the text (at least three of the eight pages given under that heading in the index contain no mention of diagnosis); and observe that the important question of the selection and fitting of trusses is disposed of in seven pages, nearly half of which are quotations. Tumors of the spermatic cord, simulating hernia, such as have been reported by Spanton (*Lancet*, January 2, 1886); lymphadenitis, which is often equally confusing, especially to young surgeons; other growths occupying the same region or involving the scrotum, are dismissed with a few words or are not alluded to at all.

As to the "tendon" ligature to which he devotes so much space, it is to be noted that he quotes Mr. Bennett May as giving it "decidedly his preference" (*British Med. Journ.*, November 15, 1890), without making

the important qualifying statement that Mr. May is speaking of ligature of the innominate, and says on the same page, that for vessels of all but the largest size, "a round cord of ordinary gut, if well selected and tied tightly, leaves little room for improvement."

The author's views as to the applicability of operative measures in hernia are more radical than the experience of the profession up to this time seems to warrant. They are characterized by exaggeration, on the one hand, of the dangers and inconveniences of truss-wearing, and, on the other, of the certainty and permanency of the results obtained by operation. He frequently speaks of hernia patients as "helpless sufferers," or in similar terms, minimizes the dangers of operative interference and promises more from his own operation than we think the majority of operators would be willing to accept, without more definite and detailed statements than we have been able to find in the book.

No mention is made of such cases as that which resulted fatally from hemorrhage in the hands of Swinford Edwards (*Annals of Surgery*, vol. i. p. 121). Keetley (*ibid.*) has called attention to some of the dangers of modern operative procedures, especially to the unnecessary sacrifice of the testicle in congenital hernias, either by its excision under some supposed necessity, or by subsequent orchitis, suppuration, or gangrene, but nothing is said as to these possibilities.

Lauenstein's plan of treating congenital inguinal hernia by drawing the testicle and the sac of the hernia—the tunica vaginalis—into the internal ring and then closing the canal by Macewen's method (*Deutsche Zeitschrift für Chirurgie*, Bd. xxxix. Heft 3) is not alluded to in this connection.

Bull's statistics in regard to recurrence are dealt with, but very unsatisfactorily so far as support of the author's opinions is concerned. They still remain a stumbling-block for the over sanguine.

Frequent allusion is made to his success by his method, which, he says, is "based upon this fundamental factorage" (*sic*): "The closure of the internal ring from below upward behind the cord, lifted from its bed; the coaptation and re-enforcement of the transversalis fascia and structures which go to make up the posterior wall of the inguinal canal are effected by the use of the buried animal suture. In this way the exit of the spermatic cord is elevated, the obliquity of the canal restored, and the intra-abdominal pressure brought to bear at right angles to it." Other methods are described very fully, and a large number of interesting but poorly assorted statistics are given.

He says (page 217) that he has failed to find any record of an attempt to close the diaphragmatic opening in hernia of that variety. O'Dwyer has reported such a case in a child three and a half years of age. The edges of the wound were pared and six silk sutures were inserted. Death occurred six hours later (*Archives of Pædiatrics*, December, 1889). In a traumatic diaphragmatic hernia Postempski enlarged the wound, reduced the prolapsed omentum, and closed the rupture by sutures. The patient recovered (*Wien. med. Presse*, No. 21, 1889). Cheyne's method for the cure of femoral hernia is too recent to have been inserted, but Kolischer's suggestion, which closely resembles it in principle, as to the possible use of the pyramidalis muscle in closing the external ring, deserved a mention. Halstead's excellent statistics are also too recent for inclusion. They merit careful consideration, and should lead to more general trial of his operation—a modified Bassini's.

The book gives the impression of being carelessly written and loosely put together.

The plates are often introduced with little or no apparent reference to the text, though an attempt is usually made, by means of a line or two, to harmonize them. On page 133 the description said to be that of Plate XXXVI. refers to Plate XXXVIII., opposite page 135, on which latter page will be found, masquerading as an account of Plate XXXVIII., the description which belongs on page 133. It is not enough apparently that page after page is taken up with a kaleidoscopic series of quotations from all sorts and conditions of writers, but on pages 412 and 413 extracts from MacCormac and Wood, already quoted on pages 324 and 325, are repeated *verb. et lit.*

There are many examples of loose construction that leave the exact meaning in doubt. On page 390 he remarks, in reference to the methods of operating for radical cure: "The subsequent operative measures are, in my judgment, far more important than the disposition of the sac." On page 395 he says, writing of the same subject: "All surgeons now agree as to the importance of the peritoneal pouch as a factor, but differ widely as to the manner of its disposition." The contradiction is probably only apparent, but it might easily have been avoided. Occasionally the English is open to even graver criticism. The use of the word "factorage," in the sense in which it is employed in the quotation as to the author's method, is surely not allowable. But it is so employed on pages 7, 356, 370, 372, 373, 395, and elsewhere. So, too, "necessitous" for "necessary" (page 376) would seem to indicate worse faults than carelessness. Examples of the same sort of English might be freely multiplied.

The author is fond of referring to Nature—with a capital N—with much familiarity as to her intentions and purposes, but his logic carries us back to the days of the Pilgrim forefathers, when, taking advantage of this intimacy, he says: "If Mr. Macewen's disposition of the sac has the advantage, as he believes, in serving as a re-enforcement to the parts, it might be inferred that this construction should have entered into the primal organization of mankind" (page 397). That settles it! As it was not so arranged originally, it is of no use for Macewen to try it.

On the whole, while the material for a very good treatise on hernia is contained within its covers, the book is distinctly disappointing as a work of practical reference, and is unsatisfactory in much of its teachings. If we owned it, we would occasionally turn to it to read some of the quaint and interesting cases from Cooper, Arnaud, and others, which it contains. If we did not own it, we would be content to remain in that condition.

J. W. W.

TEXT-BOOK OF NERVOUS DISEASES: BEING A COMPENDIUM FOR THE USE OF STUDENTS AND PRACTITIONERS OF MEDICINE. By CHARLES L. DANA, A.M., M.D. With two hundred and ten illustrations. New York: William Wood & Co., 1892.

THE book before us is divided into four parts: first, a general description of the nervous system, its anatomy and its diseases; in the second are considered the anatomy and diseases of the cerebro spinal nerves;

in the third, the anatomy and diseases of the spinal cord; and in the fourth, the anatomy and diseases of the brain.

The opening chapters of the book present a condensed statement of the structure of nerve tissue, with a description of its various elements. The description, though condensed, is thorough, and exceedingly clear, and the illustrations quite numerous and satisfactory. Next follows a chapter upon diagnosis and methods of examination, and in it the author discusses not only the various instruments of precision used in the study of nervous cases, but also gives a detailed description of how to elicit the various tendon phenomena. Each description is fittingly illustrated by a picture, so that no one could possibly misunderstand the proper method of obtaining an ankle clonus or a knee-jerk.

Next follows a discussion of the causes and the pathology of nervous diseases, and the student finds here the various conditions detailed which lead to nervous troubles, and also the relative importance of each. They are: Age and developmental influences, sex, condition and occupation, habits, heredity, climate and civilization, the various diatheses, trauma and shock, infection, poisons, and lastly, reflex causes. The general pathology of the nervous system is considered as follows: First, malformations, their genesis; second, hyperæmia, anæmia, hemorrhage, cedema, arterial and venous diseases; third, inflammations; fourth, degeneration and atrophy, softening, sclerosis, gliosis; fifth, tuberculosis and syphilis; sixth, tumors and parasites; seventh, nutritive and functional disorders.

Each one of the above topics receives brief though thorough consideration. Next follows a general chapter upon hygiene, prophylaxis, and treatment, including such topics as diet, exercise, hydrotherapy, massage, climate, and electricity.

General topics having been considered, the author introduces us to nervous diseases proper, and begins with diseases of the peripheral nervous system. We are at once impressed by the very thorough way in which the subject is handled, and by the abundance of excellent illustrations, some pathological, some diagrammatic, and others clinical; and when we have finished the perusal of the chapter, we feel that the author has condensed a great deal of most valuable information into as short a space as possible. Some of these diagrams are exceedingly interesting, as witness the one showing the distribution of the cerebro-spinal strands of the nerves and the location of transferred pains and neuralgia. It consists of a map showing the various areas on the body to which pain may be referred in affections of the eyes, the teeth, and the various diseases. Everyone will, of course, recognize that these maps present conclusions based upon clinical experience, and that they are subject to some exceptions, but on the whole the diagrams have considerable value.

Next, diseases of the spinal nerves—that is, the cranial and spinal nerves—are considered in detail, and here again a very large amount of fact is clearly stated in a most concise manner. The illustrations are again exceedingly numerous, always fitting, and showing excellent judgment on the part of the author. Many of them are original.

Diseases of the spinal cord are next considered, and here again a number of most attractive chapters are presented. There is little to be criticised in the general treatment of the subject, unless one were disposed to be captious.

In treating of diseases of the brain, the author introduces us to the subject by an admirable section on anatomy. In making clear the relations of the embryonic and the adult brain, the author borrows some apt illustrations from both Obersteiner and Edinger. Quite a number, however, are original. Some of them are important and instructive, especially those relating to the connection of the spinal cord to the cerebrum, and the cerebellum to the medulla, pons, and cerebrum. In treating of cerebral localization, the author makes use of two excellent plates to show the various motor and sensory areas of the lateral and mesial surfaces. We notice no peculiarity in the allotment of functions to the various portions of the cortex. It should be mentioned, however, that he ascribes to the upper portion of the supramarginal lobule the function of muscular memories, placing this centre directly in advance of visual memories, located in the angular gyrus. This position, we believe, is justified by both anatomical and clinico-pathological facts.

The diseases of the brain are considered in detail. Some subjects, however—as cerebral hemorrhage and secondary degeneration—are not, it seems to us, given the space which their importance would seem to demand. It cannot be said, however, that any important point has been omitted.

We are next introduced to the subject of functional nervous diseases, the author considering successively epilepsy, hysteria, spasmodic tics, paramyoclonus, Thomsen's disease, paramyotonia, and akinesia algera.

The section on epilepsy is exceedingly interesting, and in the treatment the author shows his appreciation of the value of general therapeutic measures.

Next, chorea, tetanus, and tetany are considered. We are somewhat surprised that less than one page is devoted to the important topic of tetanus. We are gratified, however, that the author devotes considerable space to the subject of neurasthenia, but are disappointed that the rest-cure, so indispensable in the treatment of profound neurasthenic states, is not considered in greater detail. This, in view of what has been done in this field by Weir Mitchell, and so often demonstrated in Philadelphia, is to be regretted.

Finally, various professional neuroses, paralysis agitans, the various disorders of sleep, are very satisfactorily treated. A brief but important chapter on cranio-cerebral topography ends the volume. Two plates illustrate the relations of the external structures of the head to the brain-centres beneath.

Taken as a whole, the book indicates much painstaking labor on the part of the author. An immense amount of fact has been crowded into a comparatively small bulk—almost too much, one would say, for a volume of its size. However, the subject is systematically and clearly presented, and the book forms an excellent treatise for the student and the practitioner.

F. X. D.

A MANUAL OF BACTERIOLOGY. By GEORGE M. STERNBERG, M.D., Deputy Surgeon-General U. S. Army; Director of the Hoagland Laboratory (Brooklyn, N. Y.); Honorary Member of the Epidemiological Society of London, of the Royal Academy of Medicine of Rome, of the Academy of Medicine of Rio de Janeiro, of the American Academy of Medicine, etc. Illustrated by heliotype and chromo-lithographic plates and two hundred and sixty-eight engravings. 8vo., pp. xii., 886. New York: William Wood & Co., 1892.

So exacting are the demands of practical medicine, and so widely distributed through all languages is the literature of the healing art at the present day, that an exhaustive knowledge of medicine in all its branches is now well-nigh impossible, and he who would keep well abreast of the advance in any particular department must be able to devote himself very exclusively to that one subject, neglecting the rest. Of no subject connected with medicine is this more true than of bacteriology. Yet, until the appearance of the work before us, we have been able to point to no thoroughly comprehensive work upon this subject in the English language, the translation of Fraenkel's *Bacteriology* by Linsley being the nearest approach thereto. The present "Manual," then, written by a veteran of tried ability and combining the results of his own investigations with those of a host of other workers gleaned from the literature so abundantly accessible in the Library of the Surgeon-General's Office at Washington, presents to the English-speaking practitioner a new evidence of the advancement of his science, and affords him opportunity to familiarize himself with facts of the greatest interest and of inestimable practical importance which have hitherto been almost inaccessible to him. To the special worker in the field of bacteriology, Dr. Sternberg's book will serve as a ready work of reference, saving his time and thus materially assisting his labors.

The author attempts to present a general view of the entire subject of bacteriology in as concise language as possible and including the results of the most recent investigations. Notwithstanding his effort to eliminate everything redundant, we find before us a volume of nearly 900 pages, much of which, of less importance, is closely printed in smaller type.

Chapters upon the history of bacteriology, on the classification of the bacteria, and upon their general morphology, serve as introduction to that part of the work devoted to the description of the instruments and methods made use of in the practical study of bacteriology. The preparation of the various staining agents, the methods of their employment, the different culture media, the methods and apparatus of sterilization, inoculation, plating, etc., find here detailed description. A chapter is also given to photomicrography as applicable to the bacteria. This constitutes Part First of the book and occupies a little more than 100 pages.

In Part Second we have a consideration of the general biological characters of the bacteria, including an account of the action of antiseptics and germicides. In a chapter of this part devoted to practical directions for disinfection will be found reprinted the "Conclusions" of the Committee on Disinfectants of the American Public Health Associa-

tion, as well as a reprint of a paper by the author on the "Disinfection of Excreta," read before the American Medical Association, in 1891. The disinfection of the hands and certain special methods particularly applicable to diphtheria will also be found in this chapter.

The way is thus prepared for the systematic description of the various species of bacteria, and Part Third (pp. 213 to 538) is devoted to the Pathogenic Bacteria. By way of introduction we very properly find here a discussion of the modes of action of bacteria upon the body, of the various channels of infection, and of susceptibility and immunity. The pyogenic bacteria, the bacteria in croupous pneumonia, the bacillus anthracis, the bacillus of typhoid fever, the bacteria found in diphtheria and in influenza; the bacillus of tuberculosis, of tetanus, and the spirillum of Asiatic cholera, are those which here receive the most exhaustive treatment, though a host of others, 158 in all, are mentioned.

Part Fourth is devoted to the saprophytes, and 330 distinct varieties are described. In this section also the bacteria in the air, those in water, in the soil, in various cavities of the body, in cadavers, and on articles of food, receive consideration, together with the special methods of investigation applicable to their detection and study.

The work closes with a chapter on Bacteriological Diagnosis, occupied by a tabulated list of the bacteria described in the book, grouped in accordance with those biological characteristics of greatest diagnostic significance. An exhaustive bibliography, containing 2582 numbers, and an index, complete the work.

It is easy to find fault with a work so comprehensive as the one before us. Slight errors inevitably escape detection during the proof-reading, and even during the preparation of so exhaustive a treatise the advance of knowledge must always have brought about some modification in the dominant opinion with regard to many of the details treated of. Furthermore, no two equally competent persons could be expected to present so vast a subject as bacteriology in precisely the same way. The errors in the present volume appear to be few and far between, being rather errors of omission than of commission, and, in general, the arrangement of the subject-matter is to be commended. As is almost inevitable in a work of such proportions, there is noticeable unevenness in the quality of the text, the author in places lapsing from the more scientific and concise presentation of his subject into redundancy and a more popular style.

As a distinct error of construction, also, is to be viewed the careless citation of references. The bibliography at the conclusion of the volume, though exhaustive and very useful, does not entirely supply the place of references at the bottom of the page throughout the work. To take an illustrative example: on page 376 we read, in relation to the staining of the tubercle bacillus, that "the original method of Ehrlich gives very satisfactory results." No reference at the bottom of the page indicates the whereabouts of Ehrlich's description of his stain, and on turning to the bibliography we find reference to three articles by Ehrlich—two under No. 1077 (neither giving the title of the article nor the page of the journal at which it is to be found), and the third under No. 1113. Similarly, at the top of page 487 we read: "Recent researches by Tizzoni and Cattani show that tetanus spores preserved upon silk threads become attenuated after a time," etc. The bibliography presents *twelve* articles by Tizzoni and Cattani (Nos.

1479-1490), through which we may ramble at will in search of the particular opinion—not unpleasantly, we admit, when time is ample, but with excusable impatience if hurried. The quotation of explicit references in connection with the text very materially augments the labor of an author, but it inestimably increases the value of his work to the special worker. As the author in his preface indicates his hope that the book may be of value “as a work of reference,” it can hardly be regarded as unjust criticism to indicate wherein the book appears to us to be lacking as such.

The chapter on Bacteriological Diagnosis is also open to adverse criticism, on the ground that the first table given is quite useless, being merely a list of the bacteria described in the book, and that the classification of the second is too inclusive to admit of its being of much service in diagnosis. We question whether the aid derivable from such tabulated lists is at all commensurate with the space which they occupy.

In general, though, the work is good and the author is much to be congratulated upon the happy termination of the very arduous and thankless task undertaken by him.

The typography and illustrations are excellent, and the printing of the less important portions of the subject in smaller type is of much service as lessening the size of an already bulky volume. J. S. E.

TRAITÉ DE GYNÉCOLOGIE CLINIQUE ET OPÉRATOIRE. Par S. POZZI, Professeur Agrégé à la Faculté de Médecine, Chirurgien de l'Hôpital Lourcine-Pascal. Deuxième édition, avec figures dans le texte. Paris: G. Masson, Éditeur, 1892. Pp. xxiv, 1182.

POZZI'S GYNECOLOGY. Second edition.

THE success of Professor Pozzi's work, attested by the fact that the first edition (which appeared less than two years ago) has been already translated into four languages, would seem to be almost phenomenal were it not for the internal evidence which it offers that this success is based upon its solid merits rather than upon an ephemeral claim of novelty. That the author is not satisfied with the laurels already won, but has issued so early a second edition, showing evidence of most thorough and careful revision, is an additional proof of his claim to the consideration of students of gynecology. Former reviewers have been united in their verdict that the book presented a faithful picture of the progress of gynecological surgery from a truly cosmopolitan standpoint, singularly free from the local coloring of any one school or country. The present edition is distinguished by the same broad scholarship and disposition to give honor to whom honor is due.

In turning over the introductory pages we are again struck with the completeness of the chapters on gynecological examination, and are pleased to note that certain errors to which we formerly called attention (notably Fig. 63) have been corrected. The subject of palpation and catheterization of the ureters receives careful attention.

Emmet's operation for the repair of the lacerated cervix does not occupy such a prominent position as American readers would desire,

being briefly discussed in a short section under the treatment of metritis (page 128), following one on Schroeder's operation. It is unfortunate that the two should be thus united, as they are so essentially different, both in their purpose and technique.

Book IV. is devoted to a comprehensive survey of the subject of uterine fibro-myomata, with especial reference to their surgical treatment. Myotomy and abdominal hysterectomy receive especial attention in Chapter IV., though it would seem that the latter term is applied almost entirely to different methods of supra-vaginal amputation. For some reason the author makes scant mention of total extirpation of the fibroid uterus, which many in America have come to regard as the ideal operation, and refers to the pioneer work of Chrobak and his followers in a brief foot-note (page 327). We observe, however, that the author is apparently not familiar with the recent American literature on this subject, notably the statistics of Krug, Polk, and Baer. Doubtless more importance will be assigned to the technique of total abdominal extirpation in a subsequent edition. We are pleased to see that Professor Pozzi has not abandoned his conservative attitude with regard to castration, although we are sorry to add that in this country, at least, his statement with regard to the growing popularity of the operation in the treatment of uterine fibroids is erroneous. Judging from recent papers and society discussions, one cannot truly say that "the number of surgeons who still prefer hysterectomy in every case is becoming smaller." In his description of vaginal hysterectomy he still favors the use of forceps, as beautifully illustrated by figures 195 and 196. Conservative surgeons will heartily approve of his comments on the Kraske-Hochenegg operation for ablation of the cancerous uterus, viz.: "Whenever cancer has extended beyond the limits of the uterus we should not attempt total extirpation." Extirpation by the abdominal and combined methods certainly demands some consideration, as it is a legitimate operation in cases in which the uterus is too large to be removed *per vaginam*, the statistics being good and constantly improving under modern aseptic methods and the employment of Trendelenburg's posture. The report of Hegar and Kaltenbach (1886), quoted on page 447, does not present a fair view of the present status of the operation.

We note the addition of new matter to the chapter on the diseases of the adnexa, also a clear description of hysterectomy as performed in cases of diffuse pelvic suppuration. With his unerring judgment and strong common sense, Pozzi is not led away by the enthusiasm of his countrymen over a procedure which our most radical surgeons have not had the courage (or the conscience?) to attempt, in spite of the favorable statistics. He refers to it in cautious terms and emphasizes the fact that its indications are limited. Its application by Péan to all bilateral inflammatory affections of the adnexa he properly calls "an abuse."

The chapter on ectopic gestation has been revised, and nearly all the recent operations for retro-displacement of the uterus are carefully described and figured.

Book XIV., on "Vaginal Fistulæ," is unusually thorough and comprehensive, the new operations for dealing with complicated fistulæ being introduced. The same improvements are noticeable in the chapter on injuries to the pelvic floor. The table of contents, index, and list of authors are models of careful work, and the numerous additions

to the foot-notes and references to the literature of each subject still further enhance the value of a work which still holds a foremost place in the copious bibliography of gynecology.

H. C. C.

A HANDBOOK OF THE DISEASES OF THE EYE AND THEIR TREATMENT.

By HENRY R. SWANZY, A.M., M.B., F.R.C.S.I., Surgeon to the National Eye and Ear Infirmary, and Ophthalmic Surgeon to the Adelaide Hospital, Dublin; Examiner in Ophthalmic Surgery in the University of Dublin, and in the Royal University of Ireland. Fourth edition, with illustrations. Philadelphia: P. Blakiston, Son & Co., 1892.

THE increasing number of students of ophthalmology; the advance in the knowledge of the pathology and therapy of eye diseases; new instruments and operations; the gradually broadening view taken by members of the profession of the direct causative influence of errors of refraction and anomalies of the ocular muscles in the production of local and reflex symptoms, and the necessity recognized by the true student of medicine for accurate and timely information, are sufficient reasons for the creation of new books and the revision of old ones on ophthalmology.

It is the duty of the critic to enter upon his task without prejudice, personal or professional; acute in the perception of the good and bad alike; sufficiently informed on modern literature and practice, to be sensitive to innovations or modifications of prevailing methods, and to conscientiously read, consider, and criticise. He must have a proper sense of his responsibility, for the author's reputation as a student, practitioner, teacher, and writer is in his hands, and a partial or unjust review, founded on superficial reading, preconceived opinion, or personal animosity or friendship, is an irremediable wrong against the author or the public.

The three previous editions of Swanzy's book have established the author's reputation. The fourth edition, published only two years after the third, confirms and increases it. The titles and honorable positions held by Dr. Swanzy are evidence of his high attainments as a practitioner and teacher, and the large sale of his Handbook, demonstrated by the exhaustion of three editions in half a dozen years, conclusively proves the high esteem in which he is held as a writer by students of ophthalmic science.

In comparing the fourth with the third edition, we notice some new material carefully selected from the latest monographs, necessitating ten additional pages, a few new illustrations and a short chapter on color-blindness introduced under the caption of Appendix II. The enlargement consists, in the main, of a consideration of granular ophthalmia as acute and chronic conditions, of xerophthalmus, rodent ulcer, thread-like keratitis, bullous keratitis, of detachment of the choroid, of the operation of iridectomy, of the localization of the cortical visual centres and their relations to the optic nerve and retina, of cerebral paralysis of the orbital muscles, and of the diseases of the neighboring cavities. The chapter on "Motions of the Pupil in Health and Disease," which gave, to some extent, a distinctive character to, and was a feature of marked

excellence in the previous editions, is reproduced almost *verbatim* and enlarged by a paragraph devoted to the very recent announcement by Prof. Damsch, that "hippus" is a pupillary sign of value in certain chronic nervous affections.

The subject-matter is considered in nineteen chapters, and its arrangement differs but little from that ordinarily followed in text-books. A brief, concise, but complete statement of the elementary principles of optics and errors of refraction precedes fifteen chapters on diseases of the eye, commencing with those of the anterior parts—lids and conjunctiva—and closing with the causes of optic-nerve disturbances found in the central nervous system. Chapter XVIII. is devoted to the motions of the eyeball and their derangements, and Chapter XIX. to diseases of the orbit. Each subject is as fully considered as the size of the book warrants; the description of symptoms and the diagnoses are clear and logical, and the treatment conservative and safe, with due emphasis on cleanliness and antiseptis. As illustrations of the author's style as a writer, and his judgment as an ophthalmic surgeon, we quote a few sentences: "I agree with those who think that enucleation of the eyeball should not be undertaken during purulent choroiditis in the acute stage, as it is liable to lead to purulent meningitis and death; but there are surgeons who do not recognize any such danger and who practise enucleation in this condition." In discussing the operative treatment of chronic simple glaucoma he approaches very close to the position taken by Schweigger, that this affection is not glaucoma at all, as is shown by the following expression of his views: "Because in such cases, while the iridectomy may prove successful so far as the reduction of the tension is concerned, yet the contraction of the fields, *i. e.*, the progress of the atrophy of the optic nerve, is often not arrested, and shortly afterward may be found to engulf the centre of vision. I go so far as to think that in such cases any operation is liable rather to hasten than to retard the blindness, and I therefore never operate on them." His convictions on other points which are at present agitated in the medical societies and journals are expressed with equal frankness. Thus, after impartially stating the advantages and disadvantages of the extraction of cataract without iridectomy, he says: "With sentimental talk about 'mutilation' of the iris I cannot pretend to sympathize. If the advocates of the method under discussion [which he previously says is older than the linear, Von Graefe's, or the three-millimeter flap operation] should find a means of insuring the eye against prolapse of the iris, the operation will be placed upon a different footing; but until then, the procedure cannot, I think, be recommended." Again, "I am opposed to the after-treatment of cataract operation without bandage, as advocated by some surgeons. It is by no means a new method, and I do not doubt that many cases recover under it. I do not believe, however, that in a long series of cases the same percentage of recoveries can be obtained by it as with the bandage." Again, after a detailed description of the operation for the expression of the contents of the granular masses in the first and second stages of granular ophthalmia, by means of Knapp's roller forceps, he says: "Some cases are immediately and permanently cured by this operation, while others, although greatly benefited, will still require a further routine treatment with local remedies. My experience with this method leads me to regard it as a most valuable one for the

cure or for the acceleration of the cure of granular ophthalmia before the cicatricial stage has come."

A critical analysis of the book reveals to the reviewer a few defects. There is no list of illustrations. The space allotted to the correction of H. and M. is altogether incompatible with its importance. In our large eye dispensaries in Philadelphia four-fifths of the whole number of patients are cases of refraction. In England and on the continent of Europe, much less attention is paid to the prescribing of glasses for ocular and reflex symptoms, as a means of cure, than in America; but making proper allowance for the diversity of opinion as to the efficacy of the careful correction of ametropia, the treatment of H. should not be dismissed in twenty-one lines. Under "retinoscopy by the plane mirror," the estimation of the refractive error necessitates a constant change in the lens held before the patient's eye, instead of the more rapid and equally accurate method of using, in the first instance, a lens strong enough in E. and H. to produce artificial M. The ophthalmometer, now commonly employed and justly regarded as a reliable aid to the diagnosis of astigmatism, is not mentioned. The author says, under granular conjunctivitis, "they (granulations) do not form on the bulbar conjunctiva," "yet, it is remarkable that the bulbar conjunctiva . . . never becomes diseased." These statements will not be accepted by all pathologists. Under pterygium the most satisfactory operation, tearing the apex from its bed in the cornea and transplanting it, is not noticed. Onyx is so frequent a complication in ulcer and abscess of the cornea that the author's omission to describe, or even to mention it, is remarkable. The statement that in anterior polar cataract "no treatment is required, as vision is not affected," is scarcely accurate. The vitreous opacities due to M. are not noticed under diseases of the vitreous humor. The chapter on the muscles is admirable in its discussion on paralysis and squint, but is incomplete in that functional disturbances of the vertical muscles are not described. Enophthalmus is omitted in the chapter on diseases of the orbit.

The choice of words and construction of the sentences, on the whole, conform to a high standard of English; but here and there the author falls into colloquialisms or positive grammatical errors. For example, page 41, line 8, "When the foci of both sets of rays is behind the retina;" pages 145, 474, "separated up," "separated off;" page 207, line 23, "there is no tendency to ulceration in this affection of the deep layers," is ambiguous from want of punctuation; page 232, line 29, "being what misleads;" page 248, line 27, "hypopyon in the anterior chamber," is tautological. A few typographical errors are noticed, and the illustrations of hemianopsia are misplaced.

If, from this somewhat lengthy enumeration of faults, scientific, grammatical, and typographical, the reviewer has conveyed to his reader the impression that they are numerous and important, he hastens to add that they are few and insignificant, and disappear in comparison with the many points of excellence, and that the study of the book has been a source of pleasure and of profit to him. He, therefore, cordially recommends it to the student of ophthalmology.

The publishers are so well known in American medical literature that an expression of the good taste and generosity exhibited in the preparation of this volume would be superfluous.

H. F. H.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

REYNOLD W. WILCOX, M.A., M.D., LL D.,

PROFESSOR OF CLINICAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL
AND HOSPITAL; ASSISTANT VISITING PHYSICIAN TO BELLEVUE HOSPITAL.

THE OLEO-CREASOTE OF DIEHL.

M. J. L. PREVOST, recalling the fact that the administration of large doses of creasote or guaiacol has been followed by symptoms of gastro-intestinal intolerance, and even of poisoning, resembling those of phenol, believes that the combination proposed by Diehl, of creasote and oleic acid, would produce a remedy capable of being split up in the organism and of setting free a definite amount of creasote without giving rise to symptoms of intolerance. The preparations made under the above name have contained 33 per cent. of creasote or guaiacol. The remedy is an ether, which oleic acid forms with creasote under the influence of different dehydrating substances, as trichloride or oxychloride of phosphorus. The mixture is made by heat, and the ether found in the uppermost layer is decanted and purified by repeated washings with either water or pure water made alkaline by carbonate of soda, then dried by dehydrated sulphate of soda and filtered. It appears, when pure, as a yellowish liquid of oily consistence, suggesting the taste of creasote, but is not caustic to the tongue. It is absolutely insoluble in water, slightly in 90 per cent. alcohol, more easily in absolute alcohol, but readily in all substances which dissolve fats, as ether, benzine, chloroform, turpentine, sulphide of carbon, and fatty oils. It readily forms an emulsion with gum arabic, or yolk of egg, and this is the most agreeable form of exhibition. Experiments were made by hypodermatic or by peritoneal injection, and by administration by the stomach, and were in comparison with a similar series of administration of simple mixtures of guaiacol or creosote in oil. Careful urinary examinations were made. The conclusions are: 1. Creasote in an oleic combination (oleo-creasote) is tolerated in larger doses than creasote simply mixed with oil, and without producing symptoms of gastro-intestinal disturbance. 2. It is much less poisonous than is a mixture of creasote in

oil. 3. After hypodermatic injection it is split up and eliminated in the urine. This elimination is sometimes slow, and lasts longer than from injection of a mixture of creasote in oil. 4. If administered by the stomach, it is evidently split up and gives rise to an elimination of phenol at least as great as when it is injected in the form of a simple solution in oil. The experiments were made from a purely pharmacological and toxicological standpoint, and do not permit of any therapeutical deductions as to the greater or lesser value of oleo-creasote as compared to that of creasote in solution in oil.—*Revue Médicale de la Suisse Romande*, 1893, No. 2, p. 102.

THE USE OF CHLORIDE OF CALCIUM IN THE TREATMENT OF PNEUMONIA.

DR. A. CROMBIE reports twenty-two cases of acute lobar pneumonia, one only being fatal, which ran a singularly mild course on a treatment which consisted simply and solely of chloride of calcium, in doses, for adults, of from five to fifteen grains every four hours. A constant phenomenon in pneumonia is the presence of peptonuria, and it is not impossible that the action of the chloride of calcium may consist in its neutralizing the toxic action of these peptones, or albumoses, circulating in the blood; if it be not some more intimate action in the blood, of the vitality of which we do not as yet know much more than the necessity for the presence of calcium chloride for the existence of the fibrin ferment.—*Indian Medical Gazette*, 1893, No. 2, p. 33.

THE TREATMENT OF PULMONARY CONGESTION OF INTESTINAL ORIGIN.

DR. HENRI HUCHARD, recalling the observations of Sevestre, of Macé and Simon, of Lesage, and others, recording the fact that the bacterium coli commune may be found in the lungs in pulmonary disturbances, records the history of a case. The intestine was cleared by calomel and resin of scammony, and intestinal antiseptics secured by the administration of benzo-naphthol, which should be administered to the amount of two and one-half drachms daily, and with the addition of powdered charcoal. Under this treatment, the gastro-intestinal disturbance ceased, and, with equal rapidity, the pulmonary congestion, and that without the use of expectorants or revulsives.—*Revue générale de Clinique et de Thérapeutique*, 1893, No. 7, p. 99.

A NOTE ON THE ADMINISTRATION OF DILUTE NITRO-HYDROCHLORIC ACID.

DR. A. LOCKHART GILLESPIE concludes from the experiments which he has performed in the laboratory, that nitric acid has the power of combining with proteids, but lacks that power, so strongly evinced by hydrochloric acid, of splitting the proteid molecule in the presence of pepsin, and its presence, therefore, probably hinders the action of hydrochloric acid by attaching itself to proteid molecules. Arguing from these grounds, in prescribing dilute nitro-hydrochloric acid he adds to it some dilute hydrochloric acid. In cases of dyspepsia in which the liver is obviously out of order, leading to some congestion of the portal system and decreased

secretion of the gastric juice, and in cases of headache relieved by the administration of acids—when the pain is frontal and close above the frontal sinuses—the two acids, with such other drugs as may be needed, yield the happiest of results.—*The Medical Press*, 1893, No. 2808, p. 219.

BROMOFORM IN WHOOPING-COUGH.

MR. F. W. BURTON-FANNING recommends this remedy, which is conveniently dispensed in the proportion of one minim, suspended in one-half drachm of compound tragacanth powder, the same quantity of simple syrup, to which three drachms of water is added. The dose varies from one-half a minim for children under one year, to two minims up to six years, given thrice daily. These doses may be gradually increased to twice the quantity. The bottle must be kept in the dark and shaken before each dose.—*The Practitioner*, 1893, No. 296, p. 100.

THE TREATMENT OF PTYALISM BY PYOKTANIN.

DR. M. HEIMANN reports a single case of salivation, the cause not being ascertained. After the use of Lugol's solution and alum without result, great improvement followed the administration of iodide of potassium. Two months later this symptom returned. At this time the former successful treatment was of no avail. The mucous membrane of the entire mouth was painted with a one to one thousand solution of blue pyoktanin, twice daily. The ptyalism rapidly improved and disappeared within three weeks.—*Therapeutische Monatshefte*, 1893, Heft 2, S. 76.

THE TREATMENT OF TABES DORSALIS.

IN the Report of the Assistant Inspector-General of the National Homes for Disabled Volunteer Soldiers are found the results of a collective investigation of this disease during the year 1891-92.

DR. F. H. PATTON, from his observation of twenty-four cases, has never seen a case, excepting one, in which the patient was not disposed to try hopefully any treatment suggested, and always with apparent temporary benefit. Eight cases were treated by suspension, and at first with marvellous results, but all finally abandoned this method, the last after an experience of five months. For the immediate relief of pain nothing has been so effectual as acetanilide. For the more permanent relief of all symptoms and for seeming improvement, nothing has been so successful as the sulphate of strychnine in $\frac{1}{80}$ grain doses, administered hypodermatically, twice a day, and continued for several weeks.

DR. WALTER H. LEIGHTON reports three cases; one in which there was steady improvement under the administration of iron, quinine, and strychnine, the acute exacerbations being controlled by atropine and acetanilide; a second received a mixture of iodine and iodide of potassium without improvement; while a third did not improve with the usual remedies.

DR. S. J. F. MILLER has made a report of seven cases, the treatment having been carried out by Assistant-Surgeon Elwell. Phenacetine appears to relieve the pain more satisfactorily than other remedies which have been in

use. In cases where a syphilitic history has been obtained, they have been treated the same as if suffering from that disease. The remedies used have been nitrate of silver in $\frac{1}{8}$ to $\frac{1}{4}$ grain doses, three times daily; liquor arsenii et hydrargyri iodidi, sulphate of strychnine, $\frac{1}{20}$ grain, three times daily; the faradic brush to the extremities, and suspensions. The appearance of the patients has improved, but it is doubtful if there is any real physical improvement.

DR. A. D. KIMBALL has used electricity, arsenic, and strychnine, in three cases with indifferent success. The interrupted current, used three times weekly, with positive pole to the nucha and the negative to the sacrum, seemed to have a temporary stimulating effect.

DR. H. E. HASSE has treated five cases; in one ataxic symptoms disappeared after receiving $\frac{1}{3}$ grain of nitrate of silver, three times daily, followed by a course of treatment by suspension, although the latter failed in the remaining four cases; in one, however, galvanization of the spine ameliorated the cephalic and abdominal neuralgias and insured better sleep.

DR. R. W. MCMAHON claims that there is some improvement in the general condition of most of his patients by the aid of general supporting treatment and diet, supplemented by sanitary environments. Two cases only are reported.

DR. T. O. BURLESON, in eight cases, has obtained marked benefit from suspension.

DR. J. S. HAYNES reports a case where cure followed the use of iodide of potash and compound tincture of gentian, cold sponge baths, and friction over the spinal column. There was no history of syphilis.

DR. W. B. WALTERS states that one patient has taken arsenic, nitrate of silver, and electricity without benefit. Improvement followed the administration of phosphorus and nux vomica.

DR. W. G. BROWNSON has had eleven cases under observation, and concludes that the greatest benefit is to be derived in those cases of clearly syphilitic origin, where vigorous treatment with iodide of potash should be employed, alternating with arsenic. In the ataxic stage, electricity and drugs have given but little satisfaction. Moderate doses of nux vomica, continued for a considerable time, have given the best results.

DR. S. M. NELSON reports that phosphorus has seemed to do the most good in the one case under his care.

DR. D. R. GREENLEE has treated two cases; one with the faradic current and iodide of potash; the other with protiodide of mercury and iodide of potash, both being apparently benefited.—*Report of Gen. William W. Averell, U. S. A., 1892, p. 163.*

[The large number of patients, their continuous residence affording opportunity for prolonged investigation, and the evident accuracy and care in making out the records, render this report valuable.—R. W. W.]

A NEW AGENT IN THE TREATMENT OF EPILEPSY.

DR. PAUL GIBIER, reviewing the literature of the past two years, believes that one observation, at least, has been established. Some patients suffering from epilepsy have had their seizures checked, at least temporarily, after the

injections of the rabic virus. In a single case, under his observation, the Pasteur injections failed. He then commenced experimentation with the injection of extract of gray nervous substance. In one case the improvement was most satisfactory. In three other cases the improvement of the general condition was noticeable.—*New York Therapeutic Review*, 1893, No. 1, p. 2.

THE TREATMENT OF MORPHINOMANIA.

DR. ENR. CHAMBARD classifies the methods in vogue. The rapid method of cure of Levinstein demands confinement in an institution, absolute impossibility of secreting or procuring a supply of the drug, precautions against bodily injury, constant care, mental occupation, physical exercise during several weeks, the critical period, however, lasting only five or six days. The progressive method, for which the rules have been formulated by Zambaco, consists in the gradual diminution of the daily dosage, and usually requires longer treatment. Erlenmeyer has introduced certain improvements in the first-mentioned method, which the writer believes to present certain advantages. The patient is kept under observation for several days, receiving his usual daily dosage of morphine, and at once the amount is diminished one-half, and usually without great disturbance. It is necessary to care for the sleep, appetite, and digestive functions of the patients, and to interfere with the evening dose as little as possible. Soon this daily amount is again reduced one-half, and the process repeated at intervals until the small amount taken renders the total withdrawal absolutely safe. Watchful care of the patient until his complete restoration to health, is insisted upon. This method causes far less suffering to the unfortunate patient than either of the others.—*La Médecine Moderne*, 1893, No. 23, p. 266.

TOLYPYRIN.

DR. PAUL GUTTMANN reports the results of a clinical study of this remedy, which extended over a period of several months. This drug, known to the chemists as para-tolyldimethylpyrazolon, differs from antipyrine is that an atom of hydrogen in the phenyl radical, C_6H_5 , is replaced by the methyl radical, CH_3 . It occurs in colorless crystals having a melting-point of 278° F., of bitter taste, soluble in about ten parts of water, readily soluble in alcohol, and insoluble in ether. In cases of typhoid fever, pneumonia, facial erysipelas, scarlatina, phthisis, septicæmia, and otitis media, it was found that one drachm of this remedy in four equal doses at hourly intervals, commencing at noon, reduced the temperature at least two and a half, generally three and a half degrees, frequently still further. This fall commenced during the first hour of the administration of the remedy, and continuing, reached the lowest point within five or six hours, rarely later. After the stopping of the drug, the gradual rise of temperature began, but usually so slowly that the highest point was not reached until the following forenoon, and then the temperature was generally not so high as before its administration. This fall of temperature is accompanied by sweating of the body, particularly upon the face, more or less profuse, and may last so long as the temperature falls. The succeeding rise of temperature is not marked by

chilly sensations. The frequency of the pulse follows the range of temperature. The range and duration of the temperature-reduction is the same as with antipyrine. With this amount of the drug there appears to be no unpleasant secondary action. In a case of pneumonia two drachms were administered within eight hours, by mistake, without the slightest untoward result. In acute articular rheumatism, in typical mild cases, one drachm in four doses, at intervals of three hours, relieves the pain and swelling in from twenty-four to forty-eight hours. In severe cases the results vary, as do those obtained by salicylic acid and by antipyrine. If necessary, the daily dose can be increased to ninety grains. In rheumatism, it has a position by the side of salicylic acid. As an analgesic, in headache, it was of the same utility as antipyrine. As the price of this remedy is less than that of antipyrine, and in intensity of its action as an antipyretic, anti-rheumatic, and analgesic, is equal to the latter, it should be preferred.—*Berliner klinische Wochenschrift*, 1893, No. 11, S. 249.

CHLORALAMID IN THE INSOMNIA OF FEVERS.

DR. HERMAN D. MARCUS recommends this remedy as best given in powder, or dissolved in some aqueous or alcoholic solution, in doses of from ten to sixty grains, the half being about the average dose. In typhoid fever, particularly in coma vigil, facial erysipelas, infectious fevers, and the febrile diseases peculiar to childhood, as measles, diphtheria, and scarlatina, he finds this drug of value.—*The American Therapist*, 1893, No. 10, p. 242.

THE TREATMENT OF CHLOROSIS.

DR. DUCLOS regards true chlorosis as consisting essentially in an auto-infection of intestinal origin. He insists upon a daily evacuation of the bowels, obtained not by purgatives, but by injections, either simply of water, perhaps with glycerin or oil, or slightly saline, aiming to secure a spontaneous evacuation at the same hour; or suppositories of soap, cacao-butter, or glycerin can be used; if simple means fail, then castor oil can be employed; avoiding, however, the salines. Iron is important, of which the ammonio-citrate is placed at the head; other forms may be used, but the simple will be always the best—to be always given with the meals. The patient should eat whatever the stomach will accept and digest without constipation or diarrhœa, but an exclusively animal diet should not be allowed. The activity of the skin must be maintained by warm general rain douches, or by friction. Out-door exercise is prescribed. Deep inspiration of air is necessary, or, in special cases, short but repeated inhalations of oxygen, either pure or mixed with a definite quantity of air.—*Revue générale de Clinique et de Thérapeutique*, 1893, No. 8, p. 113.

CASCARINE.

M. LEPRINCE has extracted from the bark of the cascara sagrada a new crystalline body which appears to be the active principle, to which he has given the above name. Extracted by one of two processes, both of which are given, it appears in the form of prismatic needles, odorless, tasteless,

soluble in alcohol (to which it gives a yellow color), in chloroform, slightly in ether, and not at all in water. Its chemical formula is $C_{12}H_{10}O_5$.—*Bulletin général de Thérapeutique*, 1893, 10e liv., p. 221.

TROPACOCAINE.

DR. OTTO SEIFERT, taking up the investigation of this drug, which has been studied by Chadbourne [see *THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, 1892, vol. civ. p. 591], has experimented upon healthy individuals, using a 5 per cent. solution. Anæsthesia of the nasal mucous membrane was produced by three applications, but without great reduction of the volume, although ischæmia was observed, and frequently symptoms of irritation, as burning. One or two applications to the throat and naso-pharynx, and to the larynx, produced anæsthesia, but also in one case very marked symptoms of irritation. A 10 per cent. solution gave better results, but here also there was a failure to reduce the volume of the mucous membrane. In equal concentration with cocaine it is less poisonous, but operations are not easy on account of the hemorrhage, and this is more difficult to control. These disadvantages then, in spite of its relative harmlessness, prevent its displacing the older drug.—*Internat. klin. Rundschau*, 1893, No. 8, S. 281.

THIURET.

DR. F. BLUM presents a very careful study of this sulphur-containing antiseptic, which arises from the oxidation of phenyl dithiobiuret as follows: $C_6H_5N_3S_2 + O = H_2O + C_6H_7N_3S_2$. It possesses weak basic properties, is a light, odorless, crystalline powder, almost insoluble in water, but is rather readily soluble in alcohol and ether. When it is decomposed, it sets free sulphur *in statu nascendi*. Biological experiments show that it has a strong antiseptic action. It has been found desirable to have a soluble preparation, and with this as a base, various salts have been made with iodine, chlorine, boron, and phenol. Of these, thiuret-phenol-sulphonate presents certain advantages. It is a light, yellow, odorless crystalline powder of exceedingly bitter taste, soluble to 3 or 4 per cent. in water, but insoluble in alcohol, ether, and oils. This preparation also has been shown to be a powerful bactericide, but in external application it is not poisonous. Administered to dogs and rabbits by way of the stomach it produced diarrhœa and vomiting, but in no respect was it harmful. Therapeutical observations have not yet been made.—*Deutsche medicinische Wochenschrift*, 1893, No. 8, S. 177.

THE TREATMENT OF DIABETES MELLITUS BY FEEDING ON RAW PANCREAS AND BY THE SUBCUTANEOUS INJECTION OF LIQUOR PANCREATICUS.

DR. W. HALE WHITE presents a very careful report of two cases under observation. Each patient was for the whole period kept upon a diet consisting each day of twenty Soya-bean biscuits, two eggs, two ounces of butter, two almond biscuits, one fluidounce of milk, twelve ounces of cooked meat, greens, water-cress, tea, and soda-water. The state of the patient and of the urine on this diet having been ascertained, each was given, in addition, for

his supper, about two ounces of raw fresh sheep's pancreas chopped fine and flavored with pepper and salt. When this was discontinued five minims of liquor pancreaticus were injected subcutaneously night and morning, the restricted diet being as before. As regards sugar, in one case it was distinctly less when raw pancreas was taken than it was before, and the same effect, but to a less degree, was associated with the injection of liquor pancreaticus subcutaneously. In the second case neither of these methods had any effect in reducing sugar. Neither feeding on pancreas nor the injection of liquor pancreaticus had any decided effect upon the quantity or specific gravity of the urine. It is doubtful if either of these methods had any effect upon the urea. The patients do not lose weight when treated with the pancreas; perhaps they gain a little; and if there is any other alteration they feel a little better for the treatment. As disadvantages are cited the fact that the first patient suffered from a severe erythema accompanied by fever, and that the second, although having no rash, yet experienced a rise of temperature and a slight sore-throat upon one day. The conclusions are that it is very doubtful whether feeding on fresh pancreas, or the subcutaneous injection of liquor pancreaticus is of any benefit in diabetes mellitus.—*British Medical Journal*, 1893, No. 1679, p. 452.

THE TREATMENT OF DIABETES MELLITUS BY SALOL.

DR. ARTHUR NICOLAÏER reports seven cases which received thirty grains of this remedy thrice daily. The results were very dissimilar; in many cases there were apparently none, in others the diabetic symptoms were influenced to a greater or lesser extent, but what particular class of cases will be benefited one cannot certainly point out. In general the remedy was well borne, although it may diminish the appetite, produce tinnitus and gastric pain, rarely vertigo. It is best administered in wafers. Albuminuria, and particularly nephritis, is a contra-indication to the use of this remedy.—*Therapeutische Monatshefte*, 1893, Heft 3, S. 102.

PHENOSALYL.

DR. BLANC summarizes the literature of this drug, which about six months ago was presented to the profession. It is a syrupy liquid, colorless, having an aromatic odor, very soluble in alcohol and glycerin, and in water to the extent of 7 per cent. As it changes color to a brown on exposure to the light, it should be kept in blue bottles. It is made by mixing phenic, lactic, and salicylic acids in definite proportions (which are not given) at a temperature of 284° F., and after fusion adding menthol and eucalyptol, and on cooling the product is dissolved in 25 per cent. of glycerin. For the sterilization of instruments a 2 per cent. solution, five to ten minutes of contact, is sufficient. Sterilization of garments soiled by pure cultures of cholera bacillus, by immersion in a 10 per cent. solution, is complete in one minute. Tuberculous expectoration is sterilized in from five to fifteen minutes by a 2 per cent. solution, so also are urines and putrefied blood. On the other hand, in experimental work, its administration has not resulted in the death of the animal, hence it may be considered to be of feeble toxicity. It has been employed in vaginal douches, 1 per cent.; in endometritis, 25 per cent. in glycerin; as a

caustic in vaginitis, radical cure in six to eight days has followed the use of tampons wet with a 2 per cent. glycerin solution. In conclusion, this product appears to be more antiseptic than phenic acid, but a little less so than sublimate. On the other hand, it is infinitely less poisonous than the latter.—*Revue de Thérapeutique Médico-chirurgicale*, 1893, No. 6, p. 156.

[The formula as given in the *Bulletin of Pharmacy*, 1893, No. 3, p. 118, is: Lactic acid, 31; salicylic acid, 15; menthol, $1\frac{1}{2}$; carbolic acid, 140 parts. The three acids are melted, and the menthol added.—R. W. W.]

MEDICINE.

UNDER THE CHARGE OF

W. PASTEUR, M.D. LOND., F.R.C.P.,

ASSISTANT PHYSICIAN TO THE MIDDLESEX HOSPITAL; PHYSICIAN TO THE NORTHEASTERN
HOSPITAL FOR CHILDREN;

AND

SOLOMON SOLIS-COHEN, A.M., M.D.,

PROFESSOR OF CLINICAL MEDICINE AND APPLIED THERAPEUTICS IN THE PHILADELPHIA
POLYCLINIC; PHYSICIAN TO THE PHILADELPHIA HOSPITAL.

ABERRANT TENDONS OF THE HEART.

HUCHARD (*Revue de Médecine*, 13e année, No. 2, p. 113) has recorded the case of a woman, forty-nine years old, in the last stages of chronic interstitial nephritis, who presented intense dyspnœa of uræmic origin. The urine was diminished in quantity, and contained considerable albumin. The lower extremities were œdematous, and the lungs were congested and œdematous. The liver was large, and tender upon pressure. The apex-beat of the heart was situated at the sixth intercostal space, a little without the line of the left nipple. The areas of cardiac and aortic percussion-dulness were considerably increased. The subclavian arteries were prominent, and the vessels of the neck displayed pulsation.

On auscultation, a soft presystolic murmur was discernible, with maximum intensity within the line of the nipple; over the body of the heart a systolic murmur, propagated into the axilla and the dorsal region. In the situation of the ensiform cartilage was heard another murmur, systolic, low-pitched, musical, distinct from the others, and transmitted in the course of the aorta. The hand applied in this area appreciated a vibratory tremor or thrill.

In the diagnosis the existence of aneurism of a valve or of the wall of the heart, tricuspid insufficiency, aortic obstruction or pericardial adhesion, rupture of a tendinous cord, and the presence of a clot or of an aberrant tendinous cord in the left ventricle, were successively considered, and by a process of exclusion the condition last named was diagnosticated.

The patient died, and at the autopsy, in addition to the lesions of chronic interstitial nephritis, hypertrophy and dilatation of the heart, dilatation of

the aorta and mitral incompetency, there was found stretching across the cavity of the left ventricle a tendinous cord, about one and three-quarters inches long, arising from the base of a small fleshy column, close to the attachment of the anterior mitral leaflet, and inserted close to the junction of the inter-ventricular septum and the wall of the ventricle.

Reference is made to two other cases of the same kind, in which the diagnosis was likewise made during life. In one there was also mitral incompetency; in the other, aortic incompetency. In all, the diagnosis was based upon the peculiar quality and character, the point of maximum intensity, and the line of propagation of the adventitious sound heard on auscultation, and the vibratory thrill perceived upon palpation. The presence of aberrant tendons in the heart is, however, not always attended by recognizable physical phenomena. For the existence of these it is essential that the tendon be interposed in the blood-current, and that the ventricle act vigorously.

It is important to bear in mind that the presence of such a tendon may lead to the formation of clots in the ventricle. Most aberrant tendons depend upon congenital malformation; in some cases the condition is a result of a pathologic process, and principally of sclerotic atrophy of the trabeculæ.

ON DISTURBANCES OF SENSATION, WITH ESPECIAL REFERENCE TO THE PAIN OF VISCERAL DISEASE.

UNDER this title, Dr. HENRY HEAD (London) contributes a long article of very great significance to *Brain* (Parts 1 and 2, 1893). Finding that the cutaneous tenderness was in many cases of visceral disease not confined to small areas, but occupied whole tracts of skin with definite borders, a more careful investigation of such cases led him to discover that these sensory disturbances followed definite lines.

An investigation of the distribution of herpes zoster revealed an exact correspondence with these areas of cutaneous tenderness in visceral disease. An attempt was next made to determine to what level of the nervous system the areas belonged, with the help of cases in which gross organic lesions were present, with the result that the areas represented the distribution of either a single nerve root, or of a single segment in the spinal cord.

In this way Dr. Head was able to map out the areas supplied by the various segments of the spinal cord on the surface of the body. It became apparent that some of these never became affected in visceral disease. By mapping out the somatic areas along which pain was referred in visceral disease, he was able to say, on Ross's hypothesis (that in visceral disturbances pain was referred along the distribution of the somatic nerves which came off from the same part of the cord as the sensory sympathetic fibres to the organ affected), what was the sensory supply from the sympathetic of the particular organ affected. In this manner another scheme was obtained showing the distribution of the sensory sympathetic fibres, analogous to that which Gaskell constructed for the motor and inhibitory fibres of the same system.

It was further ascertained that these tender areas appeared to a greater or less extent in many general diseases, such as anæmia, ague, and fever of all kinds. In the present paper the author confines himself to the discussion of

the disturbances of sensation, etc., below the level of the clavicles, reserving the consideration of the head and neck to a subsequent paper.

A convenient method of mapping out the limits of the tender areas is to touch the surface with the rounded head of a pin. The sensation produced when touching a tender area is exactly like that produced by touching a bad bruise. Sometimes the hyperalgesia is so great that the head of the pin is mistaken for the point. Another characteristic of these tender areas is that they always yield increased reflexes. This is well seen when one side of the body only is affected.

It is further found that wherever these areas of painful sensation are situated on the surface of the body, whether they be marked out by hyperalgesia or analgesia, their limits never materially alter or overlap. "Thus, if we take any three areas adjacent to one another, of which the uppermost and the lowest are tender, the clear space between them of unaffected skin will represent the full extent of the middle area. This is both curious and unexpected, for we know that the areas on the skin supplied by the nerve roots overlap considerably, and as a necessary result a circumscribed lesion does not produce a sharp border of anæsthesia."

It must not be supposed that a given visceral lesion always causes pain over the whole of its appropriate area. Every area has one or more maximum points to which alone pain may be referred and cutaneous tenderness exist. Thus, in disturbances of the stomach, instead of the two triangular areas, there may be only two tender spots over the costal margin, near the tip of the ninth rib and near the eleventh and twelfth dorsal vertebræ respectively. In cases of stone in the kidney, the maximum point is over the tip of the twelfth rib, and there is frequently considerable cutaneous tenderness at this spot. The position of these maxima is of great importance, for they furnish the clue to the meaning of pain referred to various spots on the body. The relation between the tender areas of visceral disease and the areas affected in herpes zoster are considered, and the following points of agreement are made out:

1. They have the same distribution.
2. They do not overlap.
3. They have the same maxima.

As regards the topography of the tender areas, the author points out the difficulty of recognizing the area when only the maximum points are tender, and it is only in a small proportion of cases that the whole area is tender.

It is rare for one area only to be tender. More often several areas are present at once.

Another difficulty occurs with certain areas which are extremely rarely affected, and then only in combination with several other areas, so that it is not possible to split up the whole area into its constituent elements.

The author then proceeds to describe in detail each area with its characteristics, giving in each case:

1. The area of tenderness.
2. The maximum spots.
3. The position of the pain.
4. The distribution of a case of herpes (when possible) which corresponds to the area described.

The article concludes with theoretical considerations of "Why Pain is Referred;" "Why the Skin is Tender in Consequence of Visceral Disease;" and "The Central Relations of the Various Forms of Sensation." Two plates are appended to illustrate the several areas and their maximum points.

DIPHThERITIC PARALYSIS, WITH TEMPORARY ABSOLUTE DEAFNESS.

DR. H. H. TOOTH (London) records the case of a boy, aged five years, who developed paralysis of the palate on the twelfth day after the onset of diphtheria. Three weeks later he became somewhat suddenly very deaf, and the gait became unsteady about the same time. He eventually became stone deaf. At the end of three weeks hearing began to return in the right ear, and about three weeks later in the left. Eventually the hearing was completely restored. Dr. Tooth observes that "The diphtheritic processes were more evident in the nasal passages than on the tonsils, and that might favor the view that the Eustachian tubes were both blocked. But the deafness was too absolute to be accounted for in this way; moreover, it made its appearance after all active diphtheritic inflammation had disappeared and at the same time as the paralysis of the palate and the staggering gait. In fact, it is difficult to avoid coming to the conclusion that deafness was caused by a lesion of the auditory nerve or centre, of the same nature as that which gives rise to the ordinary diphtheritic paralysis. The rapid recovery from stone-deafness to almost normal hearing also favors this view. If so, this must be a very rare sequela of diphtheria. Dr. Gowers, in his *Diseases of the Nervous System*, p. 833, vol. ii., says that 'hearing is never impaired.' The balance of opinion is now rather in favor of the neuritic origin of diphtheritic paralysis; if so, it is still difficult to account for the almost complete absence of sensory disturbance in association with the paralysis. In this case, if the auditory nerve was the seat of the lesion, it is an unusual instance of a sensory nerve being affected by diphtheritic changes. It is easier to suppose an affection of the centre."—*British Medical Journal*, 1893, No. 1680.

CRETINISM TREATED BY HYPODERMIC INJECTION OF THYROID EXTRACT AND BY FEEDING WITH THE RAW GLAND.

DR. E. CARMICHAEL (Edinburgh) records the following case (*Lancet*, 1893, No. 3629): The child, aged five to six years, looked like an infant. Features broad and massive; skin dry and harsh; abdomen prominent; umbilicus protruding; hair sparse, dry, and unhealthy; intelligence very feeble; appetite extremely capricious; obstinate constipation, and subnormal temperature. Rate of growth, one inch per annum. Treatment was begun in April, 1892; injections of ten minims being given at intervals of from seven to fourteen days. In October, feeding with the raw gland—about one lobe per week administered in cold beef-tea. "After the first few injections, the appearance of the child had completely changed; there was a marked diminution in the size of the abdomen, so that a bodice which fitted before the commencement of this treatment now overlapped by four or five inches. The thick lips and *alæ nasi* were now of normal size, the skin was pliant and soft, the temperature to touch improved, and the hair apparently more healthy, though

still sparse. In October the child began to walk, and soon was running about, and even walking long distances. The head, smaller to appearance, became covered with a fine crop of healthy hair. Marked improvement in intelligence was seen in many little actions.

"During the nine months the child has grown fully four inches; the supra-clavicular pads have quite disappeared; the appetite has improved amazingly, her dietary being a much larger one now; the constipation is gone, the umbilicus no longer protrudes, and there is no tendency to eczema. The temperature remains at about 97° F. The improvement is such that a friend and regular visitor at the house, who had been absent for some weeks, on seeing the child, did not recognize her, and thinking she was a stranger, asked whose child she was. One point I may mention—namely, that prior to the thyroid treatment there frequently appeared a dark, almost black, part on the scalp, which, after increasing in depth of color, came away in scales. I judged it to be a colored sebaceous secretion."

PARALYSIS OF THE DIAPHRAGM IN A CASE OF POSTERIOR SPINAL SCLEROSIS.

GERHARDT (*Berliner klin. Wochenschrift*, Jahrg. xxx., No. 16, p. 369) has reported the case of a woman, aged forty-five years, with a good family history, who at the age of sixteen suffered from carbon-monoxid poisoning and shortly afterward from enteric fever, and subsequently from rheumatism. At eighteen she gave birth to a child. She married at twenty-seven, and miscarried at thirty-two and at thirty-three. At the age of thirty-nine, following a fright, she fainted and lost the hearing of her left ear. From this time vision began to fail. Station and gait became more and more unsteady, particularly at night. A sense of heaviness of the legs manifested itself, with a loss of ability to recognize their position. Finally, lightning-pains, girdle-sense, and paroxysms of dyspnoea appeared. The patient was pale and wasted. The inguinal glands and some of the cervical glands were enlarged. On the neck was a patch of leukoderma. The pupils were narrow and failed to react on exposure to light. The tendon reflexes were absent, the muscles flabby. There was moderate anæsthesia and complete analgesia of the lower half of the body, anteriorly to the level of the second, posteriorly to the level of the seventh rib. There was marked ataxia of both lower and upper extremities. The larynx presented no abnormality. The laryngeal crises could be aborted by cocainization of the nares. The sterno-mastoid, the trapezius, and the other muscles of the neck were wasted in varying degree. The tongue trembled when protruded and displayed fibrillary contractions; the left half appeared the smaller and more flabby. During quiet breathing the margin of the diaphragm reached to the level of the sixth rib in the mammillary line. The epigastrium presented no respiratory movement; there was little movement in the flanks, which were at times retracted in inspiration. If the back were strongly arched and the patient inspired deeply, the base of the chest and the epigastrium expanded appreciably. In the erect posture the margin of the diaphragm sank slightly. If pressure upward was exerted in the epigastrium the diaphragm ascended a distance of an inch and a third, the width of a rib and an interspace. All movements

of the diaphragm could be prevented by gentle pressure of the hand upon the epigastrium. On gentle inspiration the lower margin of the liver ascended a distance of from a third to half an inch. Faradization of the phrenic nerve was attended with little or no response.

Gerhardt calls attention to conditions other than posterior spinal sclerosis, in relation with which paralysis of the diaphragm has been observed. These include progressive muscular atrophy; lead-palsy; hysterical palsy; inflammation of the diaphragm; palsy pressure by neoplasms upon the phrenic nerve; diphtheric palsy; alcoholic multiple neuritis.

THE BACTERIUM COLI COMMUNE IN THE CONTENTS OF A PANARIS IN THE COURSE OF ENTERIC FEVER.

BERNHEIM (*Centralbl. f. klin. Medicin.*, xiv., No. 13, p. 273) has reported the case of a washerwoman, aged twenty-five years, who presented symptoms of enteric fever shortly after having washed the linen of a person ill with the same disease. Early in the second week of her illness a panaris appeared upon the ring finger of the right hand, and soon fluctuation manifested itself. An incision evacuated half a drachm or more of fetid pus admixed with blood. Bacteriologic examination demonstrated the presence alone of the bacterium coli commune. In explanation of the event it is pointed out that the abscess was probably not of metastatic origin in the course of enteric fever, as it occurred early in the attack. It is thought that as the result of the constipation that had existed and of the changes in the mucous membrane that had taken place as a result of the intestinal process, the bacteria had gained entrance into the blood-current.

INTERMITTENT GASTRIC HYPERSECRETION IN AN ATAXIC.

SOUPALT (*Revue de Médecine*, xiii., No. 2, p. 154) has reported the case of a man who presented symptoms of posterior spinal sclerosis: abolition of the knee-jerks, lancinating pains in the lower extremities, joint-pains in the arms, girdle-sensation, and Argyll-Robertson pupils, but whose health had otherwise been good. For three days he had suffered with an intense gastric crisis. This had set in early in the morning with a feeling of general malaise and chilly sensations, followed by a sense of torsion and formication in the epigastrium. Later there was vomiting of acid liquid. In the course of the day the pain and vomiting recurred, though with slightly diminished intensity, occurring spontaneously, but invariably induced by the taking of food. The night was passed without sleep. Toward morning the crisis was repeated. The symptoms moderated again during the day, but the paroxysm was repeated during the night. The stomach was filled with liquid; its lower margin reached to the level of the umbilicus. The anterior abdominal wall was hyperæsthetic. There was a sense of constant colicky, vise-like pain in the epigastrium. Repeated examination of the gastric contents disclosed a condition of marked hyperacidity, despite the fact that little or no food had been taken in the twenty-four hours. The administration of a large dose of sodium bicarbonate afforded temporary relief. In the course of several days the paroxysm came to an end, the gastric juice, however, con-

tinuing to manifest hyperacidity. It was learned that there had been four similar paroxysms in the course of the preceding two years.

THE SPECIFIC TREATMENT OF CHOLERA.

IMBUE with the idea that as a result of tissue-metamorphosis there are produced in the lower organisms, as in the higher, certain substances, some of which (designated autotoxines) are injurious if not eliminated, while others (designated allotoxines) are protective and conservative, KLEBS (*Deutsche medicin. Wochenschr.*, Nos. 43 and 44, 1892) has endeavored to separate from cultures of cholera bacilli those substances that are injurious to the human organism, leaving those that are inimical to the cholera organism. To this end he filtered sterilized cultures of cholera bacilli and concentrated the fluid obtained over the water-bath. From this, by means of absolute alcohol, he precipitated the substance which he believed to be injurious to the human organism, leaving in solution the substances that he believed are bactericidal, curative, and immunifying, to which the name anticholerin is given. It was first shown that, when mixed in small proportion with agar and gelatin, this material possesses the power of preventing the development of cholera-organisms inoculated upon these media, as well as of checking the development of the organisms when already in process of cultivation. Other organisms were not similarly influenced. Next it was shown that anticholerin is not toxic for guinea-pigs, and subsequently the same fact was demonstrated with regard to man. The next step was to demonstrate that guinea-pigs previously treated with anticholerin were proof against inoculation with cholera, while untreated animals, under the same conditions, presented characteristic local and general manifestations. It was also shown that immunity was conferred as a result of the treatment of other animals with the fluid that collected in the abdominal cavities of such animals as were inoculable. Finally, it remained to be determined if any therapeutic results could be obtained in animals already infected with cholera. These various points having been determined in the affirmative, the agent could now legitimately be employed in the treatment of cases of cholera in man. With the consent of the authorities at Hamburg a number of patients were thus treated, and the results are published by MANCHOT (*Deutsche medicin. Wochenschr.*, No. 46, 1892, p. 1050). The cases selected were of the higher and the moderate grades of intensity and numbered 31; of these, 21 died—a mortality of 67.7 per cent. Of 103 parallel cases treated with saline infusions, 87 died—a mortality of 84.5 per cent. As a rule, 1 c.cm. of the agent was injected on the first day six or seven times; on the second day, five or six times; on the third day three times; on the fourth day, once or twice. Each case received from fifteen to eighteen injections. The largest total amount given in any one case was 30 c.cm. Depression of temperature constituted the indication for giving the injection, which was almost invariably followed by febrile reaction. Of course, warmth, stimulants, hypodermatoclysis, enteroclysis, venous transfusion, and such other measures as seemed indicated in the individual case, were employed in conjunction with the injections.

THE NUMERICAL RELATIONS OF THE COLORLESS CORPUSCLES OF THE BLOOD IN INFLUENZA, CROUPOUS PNEUMONIA, AND CATARRHAL (INFLUENZAL) PNEUMONIA.

HERMANN (*Münchener medicin. Wochenschr.*, 1892, No. 39, p. 511) has made a comparative study of the number of colorless corpuscles in the blood in cases of influenza, of croupous pneumonia, and of catarrhal (influenzal) pneumonia. In none of seven cases of uncomplicated influenza was there an increase in the number of colorless cells above the normal, even when the temperature rose above 104° F. Not uncommonly, especially if the disease had existed for several days, a diminution in the number was found. In five cases of catarrhal (influenzal) pneumonia there was little or no increase in the number of colorless corpuscles, while in four of five cases in which catarrhal (influenzal) pneumonia was suspected, or limited croupous pneumonia existed, the number was increased. Finally, in all of ten cases of croupous pneumonia the number of colorless cells was increased. It also appeared that in the cases of pneumonia in which a fatal termination was about to take place the number of colorless corpuscles declined. The thought is suggested that in virulent cases of croupous pneumonia a negative chemotactic influence is exerted, while in the less virulent cases the influence is positive.

ACUTE HEMORRHAGIC ENCEPHALITIS.

EISENLOHR (*Deutsche medicin. Wochenschr.*, No. 47, 1892, p. 1065) has reported the case of an alcoholic, fifty-four years old, in which, following an attack of delirium tremens, complicated first by right and then by left bronchopneumonia, mental restoration was incomplete. There were evidences of the existence of chronic pleurisy and chronic bronchitis, and bilateral otitis media developed. Nearly three and a half months later, vertigo, vomiting and uncertainty of gait suddenly appeared, without actual paralysis, and urine was passed involuntarily. Upon these symptoms supervened sopor, muscular resolution, extreme dilatation of the left pupil, with exophthalmus and moderate dilatation of the right pupil with failure to respond to stimuli. The dilatation of the right pupil became more marked, while the left eye was turned outward. The fundus presented no lesion. The patient died after a day, in coma. At the post-mortem examination, internal hemorrhagic pachymeningitis was found in the anterior and middle fossæ at the base of the skull, with delicate false membrane and numerous recent hemorrhages. The vessels at the base were free and their walls unchanged. In the regions adjacent to the third and lateral ventricles, as well as in the crura cerebri and in the aqueduct of Sylvius, there was a large number of fresh, dark-red hemorrhages, of peculiar, fairly symmetrical distribution, partly at the surface of the ependyma, partly within the gray matter of the optic thalamus. They were particularly numerous in the substance of the crura below the quadrigeminal bodies. They varied in size from a pinhead to a pea; the largest hemorrhage was in the median portion of the right optic thalamus. The substance of the thalamus was softened and presented a peculiar lustre and increased volume; the quadrigeminal bodies and the upper portion of the pons and the tegmental and peduncular regions presented still greater

changes, being entirely softened and of a rosy-red or reddish-gray color. In the medullary structure of the right hemisphere, external to the boundary of the lateral ventricle and its middle horn, was a softened area, as large as a cherry, of a deep-red color, but without hemorrhage. In the medullary structure of the left hemisphere, externally to the third segment of the lenticular nucleus, was an area of similar size, of a dark-gray color but not softened; presenting fine, dark points of capillary hemorrhage. The corpus callosum was soft, but of white color, and presented no hemorrhages. Microscopically a condition of destruction of the medullary tissue was found in the area of softening in the right hemisphere, with fatty granules in the walls of the small vessels, but no granule-cells. The small arteries in the hemorrhagic areas presented numerous ruptures and recent extravasations, but no miliary aneurisms. The diagnosis of acute hemorrhagic encephalitis, probably as a result of changes in the vessels dependent upon alcohol, was made.

INHIBITIVE FUNCTIONS OF GLANDULAR SECRETIONS ON SOME CHRONIC DISEASES; PSEUDO-HYPERTROPHIC PARALYSIS; LYMPHADENOMA.

IN the course of a lecture on the above subject (*British Medical Journal*, 1893, No. 1684), DR. CHARLES MACALISTER (Liverpool) mentions the case of a girl of fourteen years, afflicted with pseudo-hypertrophic paralysis, whom he has treated by feeding with thymus gland (sheep) on the supposition that, as the disease does not occur after adolescence, it "might be due to the premature cessation of some secretion which during life possibly exercises some inhibitory function over the production of the fibrous parts of the muscles."

The following is an account of the case:

"Her difficulty in walking began five years ago, and on her admission to the Stanley Hospital in the middle of last February, she presented all the usual phenomena. She was quite unable to get up if placed on her back, she had extreme lordosis, and a plumb-line dropped from the seventh cervical vertebra fell two inches away from the sacrum. She habitually stood and walked upon her toes, and any attempt to bring her heels down to the ground resulted in her falling. Each calf measured $11\frac{1}{2}$ inches. This child has been taking a thymus gland every day for about a month (with the exception of a few days when they could not be obtained), the fresh gland from the youngest sheep available being minced and incorporated with gelatin, and half the quantity (that is, a lobe) given night and morning; and so far the results have been most encouraging, for with a diminution of the size of the calves by very nearly an inch, without any general loss of nutrition, there is marked increase of strength, less lordosis (the plumb-line now nearly touching the lumbo-sacral joint), and she can walk upon her feet with the heels touching the ground. I was afraid at first that hope of success might be prejudicing my judgment in this case, and I purposely withheld any expression of opinion until some others had remarked upon the girl's condition. The improvement was first noted by the ward sister, who commented upon the diminished size of the calves, and, later, the child's parents independently expressed their surprise that she was walking and standing so much better."

The author also refers to a case of general lymphadenoma, which developed in the wake of influenza in 1891. The treatment consisted in feeding

the patient upon fresh marrow—red and yellow mixed. It was mixed with a little glycerin and incorporated with gelatin, and one teaspoonful taken thrice daily. At the end of one week a very marked improvement had taken place.

PRIMARY SCIATICA, WITH SPECIAL REFERENCE TO TREATMENT BY ACUPUNCTURE.

DR. VALENTINE GIBSON (Glasgow) publishes in the *Lancet* (1893, No. 3633), an analysis of 1000 consecutive cases of primary sciatica observed at the Devonshire Hospital, Buxton, with the following results:

"I find that 884, or 88.4 per cent., occurred in males, and 116, or 11.6 per cent., in females—a proportion of nearly 8 to 1. With regard to the side affected, 443, or 44.3 per cent., had the affection on the right side; 483, or 48.3 per cent., on the left side; and 74, or 7.4 per cent., had both sides affected. As to the age when the affection first commenced, 14, or 1.4 per cent., contracted the disease between the ages of fifteen and twenty; 159, or 15.9 per cent., between the ages of twenty-one and thirty; 310, or 31 per cent., between the ages of thirty-one and forty; 248, or 24.8 per cent., between the ages of forty-one and fifty; 187, or 18.7 per cent., between the ages of fifty-one and sixty; 71, or 7.1 per cent., between the ages of sixty-one and seventy and 11, or 1.1 per cent., between the ages of seventy-one and eighty. In 132 or 13.2 per cent., there was accompanying lumbago, and 123, or 12.3 per cent., followed the occupation of mining. The percentage of cases with lumbago is probably too low. These statistics show that 55 per cent., or more than half the cases, occurred during the prime of life. This fact shows a marked contrast to rheumatoid arthritis of the hip-joint, which so often gives rise to secondary sciatica, as is illustrated by the following statistics: Of 35 consecutive cases treated at the Devonshire Hospital, Buxton, 40 per cent. occurred between the ages of sixty-one and seventy, 22.8 per cent. between the ages of fifty-one and sixty, 20 per cent. between the ages of forty-one and fifty, 8.5 per cent. between the ages of thirty-one and forty, and 8.5 per cent. between the ages of twenty-one and thirty. Of these, 96 per cent. were males and 4 per cent. females. From the age, large percentage of males, and absence of constitutional disturbance in rheumatoid arthritis of the hip-joint, it would seem that this disease is distinct from polyarticular rheumatoid arthritis, the majority of cases in this affection occurring at an earlier age, being more frequent in the female sex, and accompanied by very marked constitutional disturbance. The results, on discharge from the hospital, of 100 consecutive cases of sciatica treated by acupuncture are as follows: 56 per cent. were cured, 32 per cent. were much improved, 10 per cent. were improved, and in 2 per cent. there was no improvement. These results, I consider, very satisfactory, considering the chronic nature and the severity of the majority of the cases. All these were treated by acupuncture, and they all used the Buxton thermal water."

The acupuncture referred to is the acupuncture of the nerve itself, which the patient can always tell by pain shooting down the leg. The needles should be withdrawn immediately. The nerve should be pierced about five times over the parts where there is pain on pressure. The external popliteal and musculo-cutaneous nerves may also be pierced, if painful.

VISCERAL TUBERCULOSIS IN LEPROSY.

DR. BEAVEN RAKE, Trinidad (*Lancet*, 1893, No. 3631), records the results of some inoculation experiments with material obtained from the visceral tubercles of lepers.

Experiment 1. Guinea-pig inoculated over nape of the neck with a piece of pulmonary tubercle. An ulcer formed at the site of inoculation. Caseous masses formed behind the ears, which contained bacilli indistinguishable from tubercle bacilli. After death, glycerin-agar tubes were inoculated from nodules in the lungs and from caseous axillary glands, but no culture of tubercle bacilli was obtained.

Experiment 2. Guinea-pig inoculated in similar way. Lymphatic glands were similarly affected, and lungs full of translucent nodules.

Experiment 3. Guinea-pig inoculated from another leper, in the same manner. Numerous bacilli—indistinguishable from those of tubercle—were found in the liver, and a few in the lung deposits.

Experiment 4. Another guinea-pig presented very similar appearances.

In each case there was a thickened, indolent ulcer at the site of inoculation, and caseating glands were common to them all.

"It is well known that attempts to inoculate guinea-pigs with leprosy have always failed, and it, therefore, seems justifiable to conclude that all these guinea-pigs suffered from tuberculosis set up by inoculation with tuberculous materials from the lungs of lepers."

The author is satisfied that the guinea-pigs were free from tubercle before experiment. After discussing the relation to tubercle, he concludes that: "1. Inoculation experiments have shown that the visceral nodules in lepers are tuberculous, and not leprous. 2. It is quite possible that leprosy and tuberculosis may be caused by the same bacillus, but this has not yet been proved."

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

PROFESSOR OF CLINICAL SURGERY IN THE UNIVERSITY OF PENNSYLVANIA; SURGEON TO THE UNIVERSITY AND GERMAN HOSPITALS:

ASSISTED BY

ALFRED C. WOOD, M.D.,	AND	C. L. LEONARD, M.D.,
INSTRUCTOR IN CLINICAL SURGERY, UNIVERSITY		ASSISTANT INSTRUCTOR IN CLINICAL SUR-
OF PENNSYLVANIA; ASSISTANT SURGEON,		GERY IN THE UNIVERSITY OF
UNIVERSITY HOSPITAL.		PENNSYLVANIA.

IRREDUCIBLE LUXATION OF THE THUMB.

POLOSSON (*Arch. Prov. de Chir.*, March, 1893) relates a case of luxation, one month old, which was found to be irreducible by any of the methods already described for the reduction of this dislocation. A formal operation showed

displacement of the external tendon of the short flexor, the sesamoid bone, and the capsule of the joint upon the dorsal surface of the metacarpus. This presented an immovable obstacle to the head of the phalanx in attempts at its reduction. There was not present either of the conditions usually complicating these luxations—the passage of the head of the bone through the tendon, or the reversing of the sesamoid bone. The anatomical conditions found present were: the interposition between the phalanx and the metacarpal bone of a muscular cone, and of the external portion of the gleno-sesamoid tendon, with the impossibility of effecting reduction by the ordinary manipulations. Clinically, it was shown that a reduction after a month was possible by an operation, and that it was necessary to guard against a recurrence by the dressing applied.

TEMPORARY TYPHLOTOMY.

CRIPPS (*Brit. Med. Journ.*, Feb. 25, 1893), in discussing the causes and treatment of complete obstruction of the large intestine, advises, first, that in all cases if enemas have failed, and neither the exact site nor the cause can be diagnosed, the abdomen should be opened on the left side, over the sigmoid flexure; if this part of the bowel prove to be below the obstruction the wound should be closed, and the cæcum exposed on the opposite side. Secondly, he advises that a small opening should be made in the distended cæcum after stitching it to the parietal peritoneum, and that this opening may be ultimately enlarged or permanently closed, according to the nature of the obstruction, as shown by the subsequent progress of the case. He reports two cases treated successfully by this method; there was immediate relief and little shock. One patient was a lady over eighty years of age.

SPINA BIFIDA; EXTIRPATION OF TUMOR; CURE.

RICARD (*La Méd. Mod.*, March 18, 1893) reports a case of spina bifida of the lumbar region, which communicated with the spinal canal. It had existed from birth, and sometimes occasioned giddiness, with pain in the head and convulsive crises, but these had latterly disappeared. There were no symptoms on pressure, and the patient could lie upon the tumor. It was impossible to remove the tumor without opening it; clamping produced convulsions in the lower extremities. On opening, a considerable amount of fluid escaped, but it was easily controlled by the finger. The remarkable points in the case were: the enormous size of the tumor—nearly as large as the pelvis; the persistence of such a tumor—communicating with the spinal cavity, but remaining irreducible; the presence of nerve filaments entering into the base of the tumor, and a large branch that came out into its cavity and returned again into the canal. He believes that the opening of all tumors of this nature is necessary before proceeding to their removal. After the removal of the tumor he scarified the internal surfaces, approximated them with sutures, and closed in the overlying structures with deep and superficial sutures, leaving no drainage and compressing with aseptic gauze, cotton, and sponges. Ten months after only a slight thickening remained to mark the site of the pedicle.

THE RESULTS OF TREATMENT BY TRACHEOTOMY AND INTUBATION IN
690 CASES OF DIPHTHERIA.

IN an exhaustive paper, in which the indications for and comparative results of these methods are minutely studied, comprising 690 cases of diphtheria occurring between 1874 and 1891, in the Children's Hospital, in Zürich, BAER (*Deut. Zeitsch. für Chir.*, Dec., 1892, Band xxxv., Hefte 3 u. 4) concludes that the better average results obtained by the method of intubation are not due to the earlier operation, but, *cæteris paribus*, are found in the operation itself, and especially in the youngest patients. There is apparently no distinction to be made in sex, either as regards prognosis or the course of the disease after operation. The mortality in the 690 cases was 43.8 per cent. Or, according to the tracheotomy and intubation periods, 45.3 per cent. and 39 per cent. respectively. Since, in the latter period, there was a greater number of operations in the pharyngo-laryngeal cases, in which the mortality is always very high, the actual mortality during the intubation period was 8 per cent. better than during tracheotomy.

The author does not, however, believe that the intubation operation is a rival of tracheotomy, but rather a means to be used before and in conjunction with it, tracheotomy being reserved for cases in which intubation fails. He gives the following as his indications and contra-indications for performing intubation. These are not as many as have formerly been insisted upon, and he believes that the spread of the diphtheritic process into the trachea is not a contra-indication, as is shown by many cases reported. Feeble children should have intubation, since the wound complications make their chances much less. Cases which are brought *sub finem vitæ* need intubation with short tubes, or tracheotomy. When superior tracheotomy cannot be performed, intubation, on account of its shorter duration, is indicated. Indications for a secondary tracheotomy following after intubation are: 1. Where masses of membrane or free portions prevent laryngeal respiration, even after aspiration. This is, however, seldom observed. 2. When laryngeal and tracheal stenosis persist after intubation has been performed. 3. Where it is impossible to insert the tube on account of its being coughed up, and where there is threatened asphyxia. The indications for a primary tracheotomy and contra-indications of intubation are: 1. Complete closure of the nasopharyngeal space through swelling and membranous deposit on the mucous membrane of the pharynx and tonsils. 2. Intense œdema of the glottis. 3. A retro-pharyngeal abscess as a complication. 4. In cases where the short tube cannot be used. He also recommends intubation in all forms of chronic stenosis, and reports two new cases.

THE QUESTION OF PRIMARY CARCINOMA OF BONE.

GEISSLER (*Arch. für klin. Chir.*, 1893, Band xlv., Heft 3), after discussing the different opinions of this subject, concludes that there is no evidence as yet of a true primary carcinoma of bone; that all cases are metastatic, and that the nature of true carcinomata, and their derivation from the epithelial cells, make it impossible for them to be primary in bone tissue, unless the same chance places epithelial tissue there, as in the case of dermoid cysts. He

regards them as always of metastatic origin, and that the primary carcinoma is so small or so deeply hidden as to escape notice. It is not always true that the secondary growths are the smaller, and this he proves by many references and illustrates by a case of supposed primary cancer of the scapula, which proved to be metastatic from a carcinoma of the bladder which, though antedating it in symptoms, had been undetected and was of smaller size.

THE OPERATIVE TREATMENT OF CONGENITAL RECTAL AND ANAL ATRESIA.

AFTER a critical and historical study of 100 cases of these conditions, and the reporting of twenty-one personal observations, ANDERS (*Arch. für klin. Chir.*, 1893, Band xlv., Heft. 3) finds that the mortality after these operations varies between 38 to 40 per cent. Any method which does not aim at reproducing, as nearly as possible, natural conditions has a higher mortality, and the author believes that a plastic operation is the preferable one in these cases. In the technique of these operations he advises the total extirpation of the mucous membrane lining the anus; the sagittal division of the intestinal occluding septum, which divides the anal pouch into halves and reaches to the coccygeal bone. A prolongation of this incision allows the removal of the coccyx, if desired. Fluctuation is a positive sign only of the presence of the rectum; its absence is of no negative value.

By atresia ani vaginalis a separation of the vagina and rectum is necessary. Atresia with cystic complications is the most hopeless and difficult to cure, but the principle of operating through the perineal region holds good in these cases as well; and the pursuance of this method leads in all cases to the best results, with more normal function and a smaller mortality.

MOVABLE KIDNEY.

AFTER reporting a case of floating kidney, FRANKS (*Dublin Journ. of Med. Sci.*, March, 1893), in speaking of the symptomatology of movable kidney in general, says: "In a large number of cases no symptoms are observed, the tumor is found accidentally; its nature is made out by the physical signs and by the history of the case. The tumor generally presents the outlines of the kidney. The hilum may be felt. Sensibility to pressure is slight or wanting, generally without pain, though there may be dragging, dull pain, sometimes as severe as renal colic, or manipulation may cause 'fainting pain.' The tumor can be moved upward and made to disappear in the hollow of the loin; this is almost pathognomonic." His study of the case reported leads him to refer the "gastric crises" to the dragging of the kidney upon the duodenum, causing it to kink, occluding it, and producing these symptoms, and that the bile duct may be occluded in a similar manner and give rise to the jaundice which is frequent. Other symptoms are neuralgic pains in the loins, starting down the thigh or along the groin of the affected side. In the majority of cases the diagnosis can be easily arrived at. The motility and return of a tumor of the shape of the kidney to its normal position is sufficiently characteristic. When its reducibility is, however, not complete, the diagnosis is not so easy, and the tumor may be easily confounded with a tumor of the liver, of the

spleen, of the ovary, or, more frequently still, of the mesentery. A kidney which has been mobile for a length of time may, owing to the pressure or traction which it exerts upon neighboring structures, set up inflammatory action, which leads to the formation of adhesions, and consequently changes the movable into a fixed displaced kidney. In such cases much assistance in the diagnosis may be obtained by a careful attention to the previous history.

THE TREATMENT OF BRAIN WOUNDS.

AFTER making a series of interesting experiments upon the brains of dogs, illustrating the great difference between irritating and non-irritating solutions, and whether they are used upon the external unwounded surface, or in the substance of the brain itself, or injected into the arteries, ADAMKIEWICZ (*Deutsche med. Wochenschr.*, January 12, 1893) concludes: For the disinfection of wounds of the cerebrum, solutions of carbolic acid and sublimate, in weakest solutions even, are to be entirely prohibited; his experiments showing that in proportions of 1 : 200 and 1 : 10,000, respectively, they are able to produce very serious symptoms—1 gramme of either, injected into the brain substance hypodermatically, producing alarming symptoms and death in dogs. In contradistinction to this, he finds that the 3 per cent. solution of boric acid can be used without danger, and believes that these experiments show that special rules must be followed in the antiseptic treatment of brain wounds.

AN IMPROVED TECHNIQUE IN BONE-SUTURING.

WILLE (*Centralbl. für Chir.*, November 19, 1892) claims that bone suture is the preferable method in cases of ununited fracture, and believes that by means of an improved technique its disadvantages and difficulties can be overcome. He believes the older instruments used for drilling bone are, in one way or another, too cumbersome, and suggests the use of an ordinary machine used for drilling steel. The drill can be fastened tightly in it, it bores in one direction, or turns the drill in but one, and does not require the space for rotation that the drills ordinarily used require, and it works rapidly. The drill may be provided with an eye, but it must be seen to be threaded; he therefore prefers a hook that is like a probe in form, but has the eye cut through at the side, and is capable of containing a No. 3 silver wire, and of easily passing with it through the hole bored by a No. 10 to 11 Chanière drill, without scratching the walls. With this, a wire passed through one opening can be easily withdrawn through another, without the necessity of seeing the eye on the other side of the bone. It should be always remembered that the line of suture should be perpendicular to the plane of fracture. In diagonal fractures this may be accomplished without drilling by grooving the bone in a plane perpendicular to the plane of fracture, and twisting a silver wire suture tightly in this groove; or by drilling through both ends of the bone in a line perpendicular to the plane of fracture, passing a double wire suture by means of the "suture tenaculum," dividing it and uniting the suture over either side of the bone. The direction of the suture, perpendicular to the plane of fracture, is the important

idea, as this prevents the shifting, displacement, and angular deformity to which the fragments are liable.

THE TREATMENT OF HEPATIC COLIC, WITH AND WITHOUT ICTERUS.

RIEDEL, in a monograph (Hirschwald, Berlin, 1892; *Centralbl. für Chir.*, November 19, 1892), reviews fifty-two cases of gall-bladder surgery. He reserves internal treatment for short attacks with slight icterus. The indications for operation are; Colic without icterus; persistent icterus, caused by an impacted stone in the choledochus; and suppuration in or about the gall-bladder. He favors the two-sided operation, believing that it is impossible to thoroughly examine the bladder through one opening, and, therefore, the two openings are less harmful than one. A stone cannot positively be removed in one operation, and therefore prolonged drainage is beneficial in promoting a return to normal conditions. Many gall-bladders, from their size and position, cannot be opened on one side alone without harm to the patient. In the case of contracted, deep-seated gall-bladders, the author procures outside drainage by forming a canal of the parietal peritoneum dissected up, with or without the fascia transversa, and united together and to the gall-bladder. The fistulæ, though often difficult to close, and sometimes requiring dilatation of the cystic duct by laminaria, usually close by the two-sided operation in from two to six weeks. In twenty-one cases of colic without icterus, nineteen were completely healed without relapse, one was not cured, and one patient died. Of eighteen with icterus, three died and fifteen were healed.

SUBPHRENIC PYO-PNEUMOTHORAX.

RAMADAN (Thèse de Paris) writing on subphrenic pyo-pneumothorax, bases his remarks on a personally observed case, and twenty others taken from literature. In the chapter on diagnosis the author states that a considerable displacement of the heart would argue for subphrenic pyo-pneumothorax; whereas this is really one of the important signs of the ordinary pyo-pneumothorax. When the latter affects the left side the apex-beat may be displaced as far as the right mammillary line. When the right side is affected the apex-beat may be found in the left axillary line. In subphrenic pyo-pneumothorax cardiac displacement is insignificant. According to the author, the therapy, which is important to the surgeon, should consist in liberal incisions, free drainage, and generous antiseptic irrigation.

Incision is certainly a more surgical treatment than puncture, recently recommended by Renvers.

URETHROPLASTY IN A CASE OF LARGE DEFECT AND A FISTULA OF THE URETHRA.

SCHÜLLER describes, in the *Berliner klin. Wochenschr.*, 1892, No. 34, the following case: The patient was a strong young man, aged thirty years. In 1882, in the course of a gonorrhœa, a small fistula formed just behind the glans, probably in consequence of a perforating chancre of the urethra.

In May, 1887, he was operated upon for the relief of the fistula. In all,

twelve to fourteen operations of the most varied character had been performed, including several flap-transplantations from the skin of the prepuce and penis. None of the operations were successful, and as the flaps sloughed in several instances, the fistula, which was small at first, became large by this loss of substance.

The author first saw the patient in 1890. At this time there was a defect in the anterior portion of the floor of the urethra, into which a five-pfennig piece could readily be admitted. This was separated from the meatus by a thin thread of tissue. One and eight-tenths cm. behind the defect (toward the scrotum) there was a small fistula, through which a probe would barely pass. Between the two openings the skin was cicatricial and adherent. In passing his water the patient was able only with difficulty to protect himself and his clothing, as the stream tended to run back. Some urine was passed through the small fistula also.

Schüller decided to operate on the large defect first, which he did by the following method: Both borders of the deficiency were split longitudinally, rather deeply, and the borders folded out. At the posterior angle the incisions were united. The flaps were thus in two layers, as in Duplay's method of operating in hypospadias, the lower flaps belonging to the urethra and the upper ones to the skin. The mucous membrane was stitched together first, so that the edges were turned a little toward the urethra, and the skin flaps then united. The small fistula was closed some months later by the same method. Healing occurred, leaving two hair-like fistulæ, probably from suture-tracts. These were closed later.

The result was entirely satisfactory; there was no evidence of stricture, and moderate-sized instruments passed readily.

The operation described occupies a position midway between flap-transplantation and linear union.

INTRA-CRANIAL SURGERY.

AFTER a critical discussion of thirty cases of intra-cranial surgery, and the study of the methods of operation, JABOULAY (*Arch. Prov. de Chir.*, Fév. et Mars, 1893), in speaking of the value of operative interference, says: "But if there are some cases in which we must not open the dura mater, as in essential epilepsies, microcephalic idiots, rebellious cephalalgias, etc.—in those cases, in a word, in which we do not suspect a macroscopic lesion, and expect the trephining to act not by a dynamic force, but by a potent though unknown mechanism—there are others in which, a deep lesion existing, it is necessary to incise this membrane. Without this, how should we evacuate a hæmatoma, empty an abscess cavity or a focus of cerebral contusion, extirpate a tumor, and give issue to an œdema cerebri. Doubtless good results have been obtained by trephining without incision of the dura mater, as we have seen in cerebral tuberculosis; and, inversely, we have seen an amelioration in a case of true Jacksonian epilepsy, after incision, where it was impossible to find any lesion of the cortical substance.

"These two cases create a certain amount of difficulty in attempting an explanation of the mode of action of the trephine. Is it simply the operation that modifies the excitability of the cerebral cortex and produces inhibition?

That is the conclusion we have arrived at, and we antagonize the idea supported by many surgeons, that its action is the purely mechanical relief of compression. It is because it produces inhibition that the trephine is serviceable in the essential epilepsies or the post-traumatics without macroscopic lesion, and in certain tumors of the deeper cerebral mass; and as we have said, that inhibition may be accomplished without necessarily opening the dura mater. It is, therefore, a question if in cases where operation is determined upon in tumors situated in the substance of the cerebrum or of the base, we should treat them in this manner. But if the value of trephining is nearly *nil* in tumors situated deeply or centrally, if our prognosis must be graver if we incise the dura, yet it must be remembered that this operation is good for tumors situated superficially and capable of extirpation. The cessation of epileptiform crises of pain and of paralyzes can be obtained by this method. Oftentimes a complete ablation is impossible, and particles remain; we find the amelioration proportional to the amount of excision. It is the rule, however, to see diminish, but not disappear, the symptoms which had persisted before operation. Those conditions due to an augmentation of the cephalo-rhachidian fluid, meningitis, general paralysis, and serous apoplexies appear to have been benefited by the operation, with incision of the dura. This intervention, if made early, will produce good results. The prognosis and the value of trephining, setting aside the complications of wounds, faults in operating, and those that come in the dressings, are better the more superficial and circumscribed the lesion is to which they are attached. The hæmatoma of the dura is the best in point of prognosis; after which we place tumors of the meninges, then of the cortex, likewise abscesses of the superficial regions. Diseases localized in one anatomical system, as serous meningitis, are less serious than those that embrace, in mass, all the intra-cranial substance, as traumatism after fracture and gunshot wounds; the former have been benefited while the latter are beyond the aid of our art. We can say that those diseases confined to one anatomical system, as a beginning meningitis, are more amenable to surgical treatment than those involving less area but more deeply situated. For example, we prefer to treat a meningitis than a tumor of the base, or one in the depth of a hemisphere, and, of two partial meningites, that of the convexity offers more chances."

GLUE-COVERED CELLULOSE: A SUBSTITUTE FOR WALLTUCH'S WOOD-GLUE SPLINTS.

HÜBSCHER (*Correspondenzblatt für Schweizer Aerzte*, 1892, No. 23) recommends cellulose as an excellent material for splints. The cellulose is prepared from wood by a chemical process. For the preparation of splints a model of plaster-of-Paris is first made. After being cut in suitable patterns the cellulose is moistened in tepid water, laid upon the plaster model and smoothed out with the hand, after which a gauze bandage is neatly applied. After drying, either in the air or in an oven, the splint is removed from the cast, a layer of glue is applied, the splint is returned to the model and another layer of the cellulose put on. After being thoroughly dried, the cast is lined and provided with hooks for lacing. It is advised to perforate the splint and to varnish it. The advantages of cellulose splints are their simplicity of preparation and their elasticity and durability.

THE LATER RESULTS OF LAMINECTOMY FOR PARAPLEGIA DUE TO ANGULAR CURVATURE.

LANE relates in the *British Medical Journal*, 1892, No. 1670, the subsequent career of the cases of compression paraplegia on which he operated. The number of cases operated on was eleven. Two of these terminated fatally. One of the fatal cases died from profuse hemorrhage from a rectal polyp, the death being in no way related, therefore, to the operation. Two other cases were unsuccessful, being only temporarily and partly benefited by the operation. The subsequent career of these patients has convinced the author of the advisability of operating on these cases as early as possible. He points out that the operation is accompanied with but slight risk. In the large majority of cases the operation not only relieves the patient permanently of paraplegic symptoms, but enables the surgeon to remove the large quantity of caseous material and such carious and necrosed bone as is often present.

In all of the cases reported, with one exception, a quantity of caseous material with carious bone existed. By this means the diseased vertebræ are put in the most favorable condition for ankylosis.

The pulmonary and vesical symptoms are rapidly relieved by the removal of the paralytic condition. The operation in no way interferes with the treatment by recumbency.

The author presents the following summary :

1. *Drainage versus cleaning out and subsequent closure of the abscess.* While drainage has yielded good results, my objections to it, as compared with the other plan, are the length of time required for cure, the consequent risk of sepsis during the course of the case, and the greater uncertainty of the results.

2. *Washing out and injection alone versus washing out and injecting after scraping.* My objections to the first plan, as compared with the second, are that the process requires in most cases to be repeated more than once, that sinuses frequently form, and that it may be necessary to resort to drainage with the attendant risks of failure of the antiseptic precautions. The second plan is more certain in its results, and does not so often require repetition, and the greater immediate risk is more than counterbalanced by the subsequent onset of phthisis, which seems to have occurred to an unusual degree in some of the lists of cases treated by that plan.

3. *What should the cavity be washed out with?* I generally use a 1 : 10,000 sublimate solution, but boiled water would, of course, do quite as well. The aseptic manipulation of boiled water is, however, much more troublesome than that of an antiseptic solution, and it might happen that some septic material might be carried in and deposited in the wound without running any chance of being subsequently destroyed. On the other hand, 1 : 10,000 is quite un-irritating, and is so dilute that there is no risk of poisoning, while it might destroy cocci. He quite admits that this strength of sublimate is not a powerful antiseptic, but if made with boiled water, and some time before use, it is less likely to carry anything into the wound than boiled water alone, and the precautions in working with it are less irksome.

4. *Is the subsequent injection of iodoform necessary or desirable?* This is a point on which great difficulty is found in deciding. By the method of

scraping, etc., the disease is in reality not entirely got rid of, remains being left both in the bone and in the wall of the cavity. The main object of using the iodoform is in the hope of destroying or preventing the development of the tubercle bacilli, and therefore, unless it is capable of doing this, its use is unnecessary. At first the author was much opposed to the view that iodoform had an anti-tuberculous action, and has, therefore, in several cases not injected. Some of these have healed quite well, but on the whole he believes that the iodoform does some good. Thus in two of his recent cases he used no iodoform in the first instance, and sinuses remained in the middle of the scar. He then opened up the sinuses and used iodoform, and the wounds healed by first intention.

5. *If iodoform is employed should we use the glycerin emulsion or the ethereal solution?* From his experience with the ethereal solution in other cases, he most decidedly gives the preference to the glycerin emulsion. He has more than once seen a tendency to sloughing in connection with the ethereal solution, and is afraid that its use might interfere with healing of the wound by first intention.

6. *The site of the incision.* As to the principles to guide us in our choice as to the seat of incision, the first is to get as far away as possible from sources of contamination such as the perineum, and the second to get as convenient access as we can to all parts of the cavity.

7. *Asepsis.* Of course, the methods employed in this operation will be done aseptically. This is hardly a matter for discussion, for whatever may be the case with such a splendid antiseptic surface as the peritoneum, in this instance, at least, strict asepsis is imperative.

OPERATIVE TREATMENT OF TRIFACIAL NEURALGIA.

STOKER (*Dublin Journal of Medical Science*, March 1, 1893), after discussing the various operative measures employed for the treatment of these neuralgias, states his belief in the following operation as the best: The eyelids are sewn together by a single stitch passed one quarter of an inch from their ciliary margins. This fixes the part and prevents irritation; a curved incision is carried along the lower edge of the orbit and parallel to it, including the periosteum; an incision connects this with a point over the infra-orbital foramen. The nerve and artery are found and separated; the nerve is clamped in a pair of forceps and divided distally. The periosteum of the orbit is next raised from its floor with a flat director, care being needed to prevent tearing, as it is very thin, and tearing complicates the wound and the results. The contents of the orbit are then raised from its floor by a retractor in the hands of an assistant, and the canal laid open by a pair of bone-forceps; this should be done with care, and not too large an opening made. The nerve is then lifted out and detached back to the point of exit from the foramen rotundum; it may be cut or avulsed; the latter is preferable, as it may influence a seat of disease higher up. The antrum, if opened, is filled with powdered boric acid. Oozing can be stopped by hot sponges. After closure with catgut sutures, without drainage, immediate union should be secured and only a slight scar remain.

The author concludes: 1. That in cases of trifacial neuralgia demanding

operative treatment, neurotomy is not usually a satisfactory or efficient operation. 2. That in purely sensory nerves, stretching is at best but a temporary expedient, and either should not be undertaker, or, having once been performed and followed by a return of pain, should not be repeated. 3. That neurectomy is the reasonable and established treatment, but the removing of the Gasserian ganglion must be held under consideration. 4. That avulsion is only to be practised as a part of a formal open operation, and that otherwise it is a blindfold and an unscientific proceeding.

JOINT DISEASE IN SYRINGO-MYELIA.

NISSEN (*Arch. für klin. Chir.*, 1892, Band xlv., Heft 1) reports three cases of arthritic disease originating from syringo-myelia; two were more distinctive in their symptoms. He thinks a diagnosis can easily be made from the following group of symptoms: The typical changes in the joint, accompanied by the usual changes in the surrounding structures; a marked rise of temperature; local anæsthesia; general neurosis of the upper extremity and the trophic and herpetiform changes in the skin. These symptoms are varied in intensity in different cases; the anæsthesia was so complete in one of the cases reported that an excision of the joint was performed without other anæsthesia. There were marked changes found in the joint itself; the capsule was enlarged and dilated, the cartilage of the articulating surfaces destroyed, and the bone enlarged; there was a large amount of fluid in the joint, new growths of bone and masses of inflammatory formation. Active motion had been restricted, while passive motion without pain was marked in its extent. Observations have not, as yet, been sufficient in number to entirely fix the symptomatology, yet a lack of any pain, together with restricted active motion and free passive motion in the joints of the upper extremity, are almost pathognomonic of this disease.

THE SUTURE OF THE SPHINCTERS IN THE OPERATION FOR FISTULA-IN-ANO.

NICAISE (*Rev. de Chir.*, Fév. 1893) believes that this operation should be done in a routine manner, after anæsthesia, and the region should be fully exposed to view by an anal speculum. After a section of all the intervening tissues, curetting, and cleansing of the wound, it should be closed by two sets of antiseptic sutures, a deep interrupted one uniting the divided muscular tissues throughout the depth of the wound, and the other, a cutaneo-mucous suture of the edges of the wound. He reports a case in which the sutures were removed on the fifth day; there was but slight separation. Full recovery with perfect action of the sphincters followed in from twelve to fifteen days.

THE PATHOLOGY OF LUMBO-SACRAL SPINA BIFIDA.

AFTER commenting upon the symptomatology of hairy growths in this region, as a symptom or sign of spina bifida, CURTIUS (*Arch. für klin. Chir.*, 1892, Band xlv., Heft 1) gives in detail two cases of lumbo-sacral spina bifida that came under his observation; in both there was a marked growth of hair over the affected region, in sharp contrast to the rest of the body; there was

in both the history of a tumor after birth that discharged a clear fluid, but gradually disappeared, leaving a scar. In one case there was no tenderness or symptoms of disturbance and pain on pressure; in the other case, these symptoms were marked, and with them an inability to perform great physical exertion, pain being experienced in lifting or jarring. There was also in this case a remarkable deficiency of muscular development in the lower extremities. There had been no operative interference, nor were there any signs which indicated any, though both patients had been under observation for some years.

OTOLOGY.

UNDER THE CHARGE OF

CHARLES H. BURNETT, A.M., M.D.,

AURAL SURGEON, PRESBYTERIAN HOSPITAL, ETC., PHILADELPHIA.

CONTRIBUTIONS TO THE SURGERY OF THE BRAIN, BASED CHIEFLY UPON OTITIC CEREBRAL ABSCESS.

E. HOFFMANN (*Deutsche medicinische Wochenschrift*, 1890, No. 48, and *Annales des Maladies de l'Oreille, etc.*, February, 1893) gives an account of a young shoemaker, twenty years old, in whom there was an acute suppuration of the middle ear, due to influenza. Abscess of brain (cerebrum) not diagnosed. There was no fever; no local symptom in head except headache. Mastoiditis diagnosed and purulent pachymeningitis. Trepanation of mastoid and skull: external purulent pachymeningitis found. Further removal of cranial area over inflamed surface of dura was effected, and the cerebral substance penetrated for abscess, which was found. Cured by operation. Suppuration in the brain substance had been transmitted from the mastoid by means of intermediary purulent pachymeningitis.

APHASIA FROM OTITIC CEREBRAL ABSCESS; TREPANATION; CURE.

SANGER and SICK give an account of the case of a man, fifty-two years old, in whom there had been chronic otorrhœa, left side, for years. Suddenly there were pain, swelling, and redness around the left ear, besides sensory aphasia. Wernicke diagnosed a lesion in the posterior third of the first convolution of the left temporal lobe. There then followed increase of cerebral pressure; no increase of pain near mastoid nor any pain upon percussion of it. Constipation, vomiting, and beginning choked disk on left side, and paresis of right facial with diminution of cerebral pressure. Abscess of brain in left temporal lobe, due to caries of the temporal bone was diagnosed, and trepanation performed above auricle, over the first convolution of the temporal lobe, and from the posterior third of same thick pus was extracted. Recovery in four weeks.—*Deutsche medicinische Wochenschrift*, 1890, No. 10, and *Archiv f. Ohrenheilkunde*, Bd. xxxiii., p. 153.

OTITIC CEREBRAL ABSCESS.

JANSEN, of Berlin, gives the history of the case of a man, forty-six years old, who suffered from hardness of hearing and tinnitus of the left ear. One month later there were marked swelling of right mastoid, headache radiating to forehead and temple, vertigo and vomiting. Four months later the mastoid was chiselled open and pus found in it. The tegmen tympani not diseased, apparently. Dura not exposed. Five days after operation, vertigo, paralysis of left arm, face, and leg. Somnolence; vomiting increasing for twelve days. No choked disk; no fever; no slowing of pulse. Conjugate deviation in the eyes and head toward the right. There were also left-sided hemiparesis and hemianopsia, hemianæsthesia, and increased tendon reflexes. Diagnosis: Cerebral abscess near the posterior part of the inner capsule. On the fifteenth day after the mastoid operation trepanation was performed one-half centimetre directly above the external auditory meatus. Dura found tense, not pulsating, of normal color and consistence. Puncture with three-millimetre trocar through the dura, forward, upward, and inward, gave vent to one-half ounce of creamy, odorless pus. The puncture was then dilated and a tampon of iodoform inserted. No escape of cerebro-spinal fluid. Recovery for two months; then, after a journey, renewed cerebral symptoms and death in ten days.

CASE II.—A man thirty-four years of age; chronic otorrhœa of left side; sudden loss of appetite and fever; vomiting; headache. Two days later amnetic aphasia. No slowness of pulse; no pain on percussion of head; no vertigo; no paralysis; no choked disk; but constipation, delirium, coma, and death.

Post-mortem. Left temporal lobe found enlarged and distended by a large abscess filled with green, fetid pus, and surrounded by a thin capsule, adherent to discolored dura immediately over the tegmen tympani, which latter was necrosed through. Around the abscess a broad zone of soft brain-substance. Sinus free. Cholesteatoma in antrum and attic.

CASE III.—A boy, eight years old; ill six weeks, apparently with pyæmic fever, preceded by headache and vertigo. In third week head turned toward *left* side. Two weeks later, after slight otorrhœa of a few days, amblyopia and subperiosteal abscess behind *right* ear, icterus, apathy, frequent pulse no fever. Trepanation three centimetres behind the auditory canal led to extra-dural fetid abscess. This was emptied and its granulating walls scraped.

Well for a few days; then high fever, paralysis of left facial nerve with twitching, and motor and sensory paralysis of left arm. No relief from removal of pus by incision of dura. Death in four weeks.

Post-mortem. Besides abscess in the right occipital lobe, there were found a sinus-thrombosis, and a bronchiectatic cavity the size of a pigeon's egg, full of pus. This was held to be possibly the primary purulent nidus.

In the Berlin ear clinic, in two and a half years—1889 to 1892—there were noted 1 acute abscess of the brain in 2650 cases of acute otitis media, and 6 chronic abscesses in 2500 cases of chronic otorrhœa. There were 4 abscesses on the right and 3 on the left side; 4 in the cerebellum and 3 in the temporal lobe of the cerebrum. All cerebellar abscesses were complicated by disease of the labyrinth.

Clinical symptoms: Sudden, severe, mostly febrile seizure, with headache on the side of the diseased ear; generally vomiting. Vertigo and vomiting occurred in 1 of the 3 temporal lobe abscesses and in 2 of the 4 cerebellar abscesses. Constriction of the head occurred in none of the temporal abscesses, but occurred in 1 of the cerebellar abscesses. Restlessness occurred in 1 of the temporal abscesses and in none of the cerebellar abscesses. Weakness of memory occurred in 1 of the temporal abscesses and in none of the cerebellar abscesses. Stiffness of neck did not occur in temporal abscesses, but in all of the cerebellar abscesses; also in extra-dural abscess in the posterior fossa of the skull, both with and without sinus-phlebitis and with absence of lepto-meningitis, and with infiltration of deep muscles of the neck (nucha and throat). Pulse in 2 cases fell to 50 and 60; respirations 70 to 100. Choked disks in 1 case only—greatest on the affected side. Albumin and sugar not found in urine. Tongue coated and constipation present in all the cases. Four times there was rapid emaciation, and in one case there was icterus.

Cerebral symptoms in all the temporal abscesses, viz.: twice sensory-motor aphasia; once hemianopsia; and the final symptoms were: 2 apoplectic; 1 hemiplegia from above downward, with opposite hemianopsia and hemianæsthesia. Death in from seven to ten days—not once by escape of pus into ventricles or meninges. One abscess was diagnosed and located; two abscesses were diagnosed but not located, and three abscesses were not diagnosed at all.—*Archiv für Ohrenheilkunde*, Bd. xxxiii.

CEREBRAL ABSCESS IN CONSEQUENCE OF CHRONIC OTORRHOEA.

URBAN PRITCHARD gives the history of two cases of the above-named disease, in which operation was performed, with recovery.

Case I. Man, twenty-three years of age; subject of chronic otorrhœa left ear. After taking cold there were increase of discharge and increase of headache already present, attacks of partial unconsciousness, with loss of speech, and spasms of facial muscles and twitching of left side, but there was no paralysis from loss of sensibility. Finally somnolence, confusion of ideas, slight paralysis on left side of face, fetid pus from ear and tenderness on pressure about two inches above the auditory canal; congested optic papilla. Trepanation two inches above and one and a half inches in front of auditory canal; no pus found. Second opening, one inch behind the first, gave vent to fetid pus from the extra-dural surface. The patient made rapid recovery; there was noted some slowness of speech, with some regular attacks of aphasia, every fourteen days, lasting twenty minutes, finally less frequently. The otorrhœa ceased.

Case II. Man, twenty-six years of age; seven or eight years had otorrhœa on left side. Patient had often suffered from attacks of pain in left ear, once with swelling on left side of the neck. Sudden pain in ear; two chills, and vomiting caused him to seek the hospital. Headache, especially at a spot above the middle of zygoma; vertigo; later, elevation of temperature, delirium, twitching of left eyelid and angle of mouth; retention of urine, unconsciousness. No optic neuritis, no paralysis. Trepanation, one and a quarter inches behind the auditory canal and the same distance above the base of the skull;

bone and dura entirely healthy, but a puncture forward and inward gave vent to half an ounce of fetid pus. No relief to symptoms from this operation. Delirium continued, two chills occurred, and slight loss of power in right arm and leg, also optic neuritis. Further puncture of brain liberated no pus. Finally lengthening the aspirator brought away two drachms of pus. Then gradual improvement took place. Word-deafness was frequent in this case at first. The patient had two attacks of unconsciousness, lasting from twenty to thirty minutes, with some aphasia in the second attack, after he resumed his work as laborer. The otorrhœa was not healed because of carious bone in the drum-cavity.—*Archives of Otology*, vol. xxii.; *Archiv f. Ohrenheilkunde*, Bd. xxxiv.

CASES OF CEREBRAL ABSCESS.

EDGAR GRUBERT has presented the histories of two cases of cerebral abscess, one of which has otological interest as it was one of abscess in the left cerebellar hemisphere, the size of a mark piece, in consequence of acute purulent otitis media, in a recruit twenty-two years of age, brought on by deliberate insertion of some kind of acid into his ear for maiming purposes. Acute purulency set in, and was soon followed by facial paralysis, hemorrhage, and great denudation of the lower part of the left petrous bone, as far as the carotid canal. The wall of the latter toward tympanic cavity was destroyed, and the tegmen tympani removed; meninges normal; brain œdematous. Lateral ventricles widened. In the white substance of the left cerebellar lobe, close behind the petrous pyramid, there was an abscess with indistinct capsule, filled with thick, greenish, not very fetid pus. No softening of cerebral tissue about the abscess.

The author says similar cases are not uncommon among recruits about the period of mustering into service.—*Archiv f. Ohrenheilkunde*, Bd. xxxiii., p. 262.

TWO CASES OF BRAIN-ABSCESS FROM ACUTE OTITIS MEDIA.

C. TRUCKENBROD, of Hamburg, gives an account of two cases of brain-abscess caused by acute purulent inflammation of the middle ear. One case, a man, twenty-nine years of age, had the abscess in the temporal lobe, and the other, a man, twenty-five years of age, had the abscess in the cerebellum. Both resulted fatally.—*Zeitschrift für Ohrenheilkunde*, 1892, Bd. xxii.; *Annales des Maladies de l'Oreille*, etc., March, 1892.

BRAIN-ABSCESS FROM ACUTE OTITIS MEDIA; CURED BY OPERATION.

TRUCKENBROD reports (*Zeitschrift für Ohrenheilkunde*, Feb., 1892) a case of abscess of the left temporal lobe from acute otitis media, cured by operation. The patient was a man fifty-four years of age, always in good health before the attack. Following an attack of grippe, he became affected with an otitis media on the left side, without acute inflammatory symptoms. In the course of three weeks there appeared suddenly violent parietal pain, paresis of the facial nerve, aphasia, weakness of the right arm, anarthria, and alexia, but

there was no further symptom of tabes. The temperature was irregular. An abscess in the left temporal lobe was diagnosed, and the opening of the cranial cavity to relieve this was made by starting from the roof of the antrum. Cured in four weeks, with closure of tympanic perforation and restoration of hearing. The patient became quickly fatigued when he made any effort of memory.

CEREBRAL COMPLICATIONS OF OTITIS.

A. ROBIN declares that the brain lesions consecutive to otitis are always multiple or associated, and the most frequent associations are meningitis and cerebral abscess, and meningitis and phlebitis, solitary or associated with abscess of the cerebellum. He describes several clinical forms: a slow or latent form; a fulminant form; a rapid form.

The first is the most common. The second form may last but a few moments; it is an infectious form. The third is the rapid form, and may last two or three weeks.—*Annales des Maladies de l'Oreille, etc.*, January, 1892.

CONTRIBUTION TO THE STUDY OF INTRA-CRANIAL ABSCESSSES OF OTITIC ORIGIN.

L. PICQUÉ and CH. FEVRIER present an article giving an excellent *résumé* of recent literature on this subject, with a table of twenty-five cases of cerebral abscess consecutive to otitis, published within the last three years—in various parts of Europe.—*Annales des Maladies de l'Oreille, etc.*, December, 1892.

FIVE CASES OF OTITIC BRAIN-ABSCESS, WITH A SHORT DESCRIPTION OF BRAIN-ABSCESSSES IN GENERAL.

THOMAS HEIMAN, of Warsaw (*Zeitschrift für Ohrenheilkunde*, Bd. xxxiii.), gives the histories of three of these cases occurring in subjects of active chronic purulent otitis media, one in a subject of subacute purulent otitis, and one in a subject of intermittent chronic otorrhœa since childhood, the purulency, however, having recently been inactive.

In these five cases the diagnosis was made correctly three times before the rupture of the abscess, and twice not until after the rupture. Localization was incorrectly diagnosed once, in that at the autopsy the abscess was found in the cerebellum and not in the cerebrum, as was supposed.

The history of the cases shows us that each possessed peculiarities, which were wanting either totally or in part in the others. The inconstancy of the symptoms, and even the want of many of them, have been observed in other cases—a circumstance which renders clearness of diagnosis very uncertain. In three of these cases the diagnosis was soon made. In one the fever was of the characteristic intermittent type, while in two it failed entirely. Headache was wanting in two instances, and in the other three cases, it was only once characteristic of cerebral abscess. It was even shown by the history of two of these cases that otitic cerebral abscesses may run their course without fever and headache. Slowness of pulse was observed three times,

and "was probably present in the others." Vomiting, weakness, faintness, and normal eye-ground, were observed in all of the cases.

Loss of appetite was observed in four of the cases, constipation in three, trembling of the tongue upon protrusion, three times; great emaciation, in two cases; central disturbances in the latest portions of the final stage, in all the cases; ptosis, once; blepharospasm, in two cases; contraction of the pupils, in three of the cases; unevenness of pupils, with the more contracted pupil on the diseased side, in two cases; paralysis, or paresis, of the facial nerve on the side of the cerebral abscess—dependent, however, upon the aural lesion, in three cases; contractions, convulsions, hemiplegia, local anæsthesia, increased then diminished skin- and joint-reflexes were observed in all of the cases, sooner or later. Weber's test was positive four times, and negative once. Consciousness was disturbed in two of the cases toward the end, and once it varied intermittently.

The abscess was situated on the right side, in three cases (twice in the hemispheres, and once in the cerebellum); and on the left side, in two cases.

Solitary abscesses were found in four instances, and in one case, two were discovered. Pure, uncomplicated abscesses were found in three cases. The abscess was complicated by thrombus-phlebitis in two instances. Extra-dural collection of pus was found in two instances. Death resulted from rupture of the abscess into the cranial cavity in two cases, and once from rupture into the lateral ventricle. Œdema of the brain, in one instance, and encephalo-meningitis, after an operation, in another case, caused death. All the abscesses were encapsulated, and contained bad-smelling pus.

The author says: "A comparison of the symptoms in the five cases of otitic abscess of the brain has demonstrated that they possess very few symptoms in common, and that all the symptoms, when viewed separately, present nothing pathognomonic of otitic cerebral abscess. In order to recognize such an abscess promptly and correctly, one must consider most carefully, besides the etiology, all the symptoms of the disease, the duration, and the length of time the patient has been under observation. . . . Indeed, we shall not lose a single patient by waiting too long. I believe, indeed, that no surgeon should, without the surest diagnosis, open the skull cavity, and probe around in the brain-substance with knife or trocar; for notwithstanding the most careful antiseptis, we are not always able to guard against wound-infection or a fatal encephalo-meningitis, in consequence of even a puncture or slight cut into the brain-substance."

TREPANATION OF THE SKULL AND OF THE MASTOID APOPHYSIS CONSECUTIVE TO ACUTE OTITIS MEDIA—ABSCESS OF CEREBRUM.

POLO (*Revue de Laryngologie, d'Otologie, et de Rhinologie*, No. 2, p. 42; and *Archiv f. Ohrenh.*, Bd. xxxiv., Heft 3, p. 238) presents an account of a case of acute purulent otitis media, left side, from measles, in a boy six years old. From the outset intense, increasing headache, especially on left side; great restlessness; fever at night; dilated pupils, no reaction to light; pulse hard and slow; sensorium dull; sleeplessness; bilious vomiting; involuntary escape of urine in bed; internal strabismus of left eye; fibrillar twitchings of facial muscles and the sphincter palpebrarum; perforation in lower posterior

quadrant of the membrane; auditory canal and mastoid without swelling; tenderness on pressure behind and above the ear, decreasing as the temple was approached. Mastoid opened without finding pus; next day, as no relief followed the operation, trepanation of skull was performed, 4.5 centimetres above the left auditory canal. The brain bulged outward; crucial incision of dura. Puncture of brain, forward and backward, without result. Then puncture was made directly inward, 4 centimetres deep, which was followed by two spoonfuls of yellow, thick pus; then escape of cerebro-spinal fluid. Incision of brain in line of Troquart; drainage; suture of dura, and antiseptic dressing. No improvement; unconsciousness continued; pulse, 130; temperature, 39.5° C.; left eye turned outward instead of inward. Death the second night after operation.

CONTRIBUTION TO THE STUDY OF ABSCESS OF THE CEREBELLUM CONSECUTIVE TO OTITIS.

L. G. JOURDANET (Thèse de Lyon) states that lesions of the cerebellum resulting from otitis are much less frequent than are those affecting the meninges and the cerebrum, hence less noted by aurists and general surgeons. According to Jourdanet's investigations, chronic suppurative otitis media gives rise to abscess of the cerebellum in the proportion of three in every ten cases of otitic encephalic abscess, *i. e.*, 30 per cent. of all cases. Abscess of the cerebellum is more likely to occur in the adult than in the child, because of the absence in the latter of well-developed mastoid cells. A remarkable exception to this rule was the case reported by Burnett (*International Medical Journal*, Philadelphia, August, 1892), observed by him, and operated on by Keen. In this instance, the abscess was the result of an acute otitis media. Abscess of the cerebellum may coexist with those in the cerebrum in the proportion of 5 per cent. They are generally solitary, being sometimes in direct communication with the original lesion, and sometimes separated by a layer of healthy tissue. They are usually of some duration when the autopsy is made, and they may be accompanied by thrombosis of the sinuses, basic meningitis, visceral lesions, etc., which contra-indicate surgical interference. Diagnosis is extremely difficult. Generally, the surgeon is led to penetrate the cerebellum, after a fruitless trepanation in the region of the temporo-sphenoidal lobe.

CASE OF CEREBELLAR ABSCESS SECONDARY TO EAR DISEASE, TREATED BY TREPHINING AND DRAINAGE OF ABSCESS; DEATH.

By Brigade Surgeon Lieut.-Colonel C. E. HARRISON, M.B. Lond., F.R.S.C. Eng. (*London Lancet*, October 1, 1892), the history is given of a case of a young man who had been affected with purulent discharge from his right ear for two years, and who was suddenly seized with pain in this ear, headache, and vomiting. Rapid emaciation set in; no marked rigors; some diarrhoea for a few days; in two weeks a little better, sat up, then suddenly a relapse, with severe headache, chilliness, no vomiting; in a month from first seizure his body was much wasted; abdomen retracted; skin pale; surface of body and limbs very sensitive to pressure; pupils equal and sluggish. There had been no paralysis, no convulsions; he was partly conscious, but

groaned loudly at times. Cerebration moderately sluggish. The tongue was furred, and the breath offensive. Copious, offensive discharge of pus from the right ear. As all the symptoms pointed to intra-cranial suppuration, it was determined to trephine first over the temporo-sphenoidal lobe, and explore for pus, and if not found, to trephine over the occipital bone, and explore the cerebellum. This was done, without an anæsthetic, and pus found in the last-named locality. Next day the patient seemed more comfortable and more conscious, but died on the second day after the operation.

Autopsy revealed the abscess-cavity not circumscribed, its walls being composed of softened brain-tissue. Necrosis of petrous bone, on the front and the back surface, was found.

OBSERVATION OF A CASE OF ACUTE PURULENT OTITIS MEDIA: CEREBELLAR ABSCESS, AND DEATH IN THREE WEEKS.

C. H. BURNETT (*International Medical Magazine*, Philadelphia, August, 1892) gives an account of his observation of the case of a girl, five and a half years old, who was attacked with acute otitis media, and suffered great pain in her right ear for a week, when the earache was relieved by a spontaneous rupture of the membrana tympani. The child then began to complain of frontal headache and seemed dull. She also became weak, lost her appetite, and began to emaciate. The bowels and kidneys were not deranged. The child complained of headache and asked to be allowed to go to bed, which she did at the end of the second week of her malady. All the symptoms growing worse and the child passing into a stupor, the homœopathic physician who had charge of the case was dismissed and a regular physician was called in. The latter diagnosed brain malady from ear-disease, and asked Dr. Burnett to see the case in consultation. The child was found lying on her left side, her head thrown back and legs drawn up. Her lips were parted, the lips and tongue being covered with sordes; apparently no fever; pulse slow; child nearly unconscious.

A little muco-pus came from the right ear; a perforation in the upper, anterior quadrant of the red and swollen membrane was detected by means of the otoscope. An abscess of the brain was diagnosed, but its localization was not correctly determined. At Dr. Burnett's advice, Dr. W. W. Keen was asked to trephine the skull for the relief of the abscess. This was done the following day. The mastoid antrum was first opened and the bone cavity scraped; cheesy pus being found in the mastoid cells. The latter were softened by disease. A trephine opening was then made, one inch and a quarter above and the same distance behind the external auditory meatus, on the supposition that the case was one of extra-dural abscess. Horsley's dural separator was then passed forward and downward until it struck the ridge between the anterior and posterior surfaces of the petrous pyramid. Then it was passed into the anterior and into the middle fossa of the skull. No pus was found; neither did puncture of the temporo sphenoidal lobe of the brain lead to pus. Owing to the condition of the child it was not deemed wise to trephine over the cerebellum. The child died in eleven hours after the operation. The autopsy revealed an abscess in the right hemisphere of the cerebellum, containing about two ounces of odorless pus. On the posterior surface of the

petrous bone a communication existed with the middle ear by means of what seemed to be a widened vascular channel not necrotic, and to its opening into the cranial cavity the approximating meningeal surface of the cerebellum was adherent.

A CASE OF SO-CALLED BEZOLDT MASTOIDITIS: OPENING OF THE MASTOID; CRANIOTOMY. AUTOPSY: ABSCESSES IN THE TEMPORAL LOBE AND IN THE CEREBELLUM; SINUS-THROMBOSIS ON THE OTHER SIDE.

H. KNAPP (*Archives of Otology*, vol. xxi. p. 239) presents the history of a remarkable case: A woman, twenty-five years old; pregnant, six months; symptoms of acute otitis media catarrhalis, with earache, September 25, 1891; previously good ears. Patient took cold in Central Park, New York, from lying on the grass. She was ordered warm irrigation to ears and a leech behind each ear; better for four weeks. October 25th, skin behind each ear became red, swollen and painful; there was no discharge from the ear at any time. These symptoms behind the ears again disappeared. December 23d, after an evening outing, earache and intense headache, loss of appetite, and attacks of dizziness (for five minutes). Then symptoms disappeared, excepting headache, which remained constant. Knapp again saw her on January 17, 1892. She had been confined, January 5th; labor normal, but much "excruciating" headache. After the confinement headache abated for a short time, then it returned with swelling behind the ear and down the neck. This tumefaction was incised, January 17th, by family physician, liberating large quantity of pus. Headache not diminished. Pus came from the wound every day and the swelling went down. During last three weeks no pus from wound; headache, nausea, vomiting (one day), and dizziness, more at night than in the day time, and sleeplessness. Left ear normal; right ear-canal at inner portion, red, swollen, and bulging at upper posterior part; membrana tympani red throughout. No discharge in canal. Mastoid region red, swollen, hard, and tender to touch. Swelling most marked behind and below the tip of the lobule of auricle. This swelling extended one and a quarter inches behind and one and a half inches below the ear down the sterno-cleido-mastoid muscle. Pressure here brought out the pus from wound already made by the family physician. A probe could be passed two centimetres into the wound, and passed below the tip of the mastoid without entering the cells or touching rough bone. Percussion of skull not painful.

Diagnosis, Bezoldt's variety of mastoiditis; viz, that the pus had made its escape through an opening on the medial (inner) side of the mastoid into the digastric groove and the head of the sterno-cleido-mastoid muscle. Knowing that in this form of mastoiditis there is also a tendency to perforation in the posterior wall of the osseous auditory canal, the upper wall of the tympanic attic bordering the middle cranial fossa, and the medial (inner) table of the mastoid cavity bordering on the posterior cranial fossa, immediate operation was advised, consisting, first, in extensive opening of the mastoid. This was done, and pus was found when the antrum was reached.

Next day the swelling at the head of the mastoid disappeared. No discharge. Pulse 100; temperature 100.4° F. (38° C.). January 31st, morning, temperature 99.2° F. No pain; no discharge; pulse better. Evening, tem-

perature 102° , some headache, no ear pain, but she had developed a pleuritic effusion on the right side. Temperature 99° to 101.8° . Under proper treatment this pleuritic effusion disappeared and the patient was discharged from the hospital fifteen days after the operation on the mastoid. No swelling and no discharge.

The patient remained well for a week, when she complained again of headache; no fever, no nausea. February 28th, a month after operation, intense headache; no discharge from wound; no fever. The mastoid wound was opened again freely by Dr. Knapp, and a silver probe inserted, but no pus was found, and the inner plate of the bone was found unbroken everywhere. No tenderness of skull upon percussion now, nor at any time.

March 1st: Headache less; not localized. Mastoid cavity scraped with sharp spoon, but nothing found. March 4th: Intense headache at times. On March 12th, while talking gayly with her sister the patient had sudden headache, was impeded in speech, grew moody, was without appetite, and remained so. When seen by Dr. Knapp, she had no fever and could not be roused. At this time a hard swelling, two inches in diameter, was seen in the upper part of the left sterno-cleido-mastoid muscle, chiefly on the inner surface. Left ear and mastoid normal. No optic neuritis. The patient took no food. Her pulse now varied from 88, to 72, to 60, and temperature from 100.2° , to 98.4° , to 99.5° in three days. At last both optic disks became congested and slightly swollen, margins somewhat covered. Continuance of headache, stupor, loss of appetite, vomiting, impediment of speech, slow pulse, temperature 99° to 100° , and the beginning of optic neuritis led to diagnosis of severer lesions than meningitic irritation. The same symptoms continued up to April 4th. The diagnosis lay between purulent meningitis, extra-dural suppuration, and cerebral and cerebellar abscess.

Dr. Knapp now decided to trephine the skull for relief of abscess. Operation, April 5th, 1892, was performed in search of abscess, either within or without the dura mater or in the brain substance. Posterior cranial fossa opened: no pus found; dura mater and lateral sinus exposed and appeared healthy. Now the operator attempted to penetrate the tympanic attic and thence the middle cranial fossa. Not being sure of having entered the attic cavity, Knapp trephined the squama one centimetre above zygomatic process of temporal bone, one and a half to two centimetres wide, and exposed dura of middle cranial fossa. No pus. Then he split the healthy-looking dura and incised the pia mater and superficial layers of brain. All healthy, and further operation was desisted from, as the patient was too weak to endure further incision into the temporal lobe or elsewhere in the brain in search of the probable abscess in it.

Autopsy revealed some puriform liquid on tentorium cerebelli. The right lateral sinus was found filled with dark, clotted blood opposite to the seat of the operation-wound in the mastoid and vicinity. Farther backward toward the torcular the contents of the lateral sinus became puriform. "At the torcular all the confluent sinuses were filled with creamy pus; the longitudinal in particular and the lateral sinus were tightly filled, and evacuated large quantities of pus on being cut. The suppuration continued into the left internal jugular vein, and when pressure was made on the swelling under the upper

part of the left sterno-mastoid muscle the pus welled out through the foramen lacerum into the posterior cranial fossa."

Meninges normal excepting the pia mater, which, over the right temporo-sphenoidal lobe and the right cerebellar hemisphere, was somewhat milky here and there; on tearing some of the veins, they were found filled with pus. Two abscesses were found, one in the right temporal lobe, the other in the right cerebral hemisphere, directly opposite the seat of operation in the bone.

According to HEIMAN (*La Tribune Médicale*, October 13, 1892) the seat of the abscess depends upon the locality of the caries. When this is in the petrous bone proper, generally the abscess will form in the temporal lobe, and when the necrosis affects the mastoid, the abscess will be seated in the cerebellum. Incoördination of movements, which exists sometimes with abscess of the cerebellum, is a guide to the localization of the seat of the suppuration.

MAXIMOVITCH (Society of Russian Physicians of Warsaw) reports two cases of abscess (embolic) of the cerebellum, in which no necrosis of the petrous bone nor of the mastoid was found at the autopsy.

EXTRA-DURAL ABSCESES FOLLOWING OTITIS.

HESSLER (*Archiv f. Ohrenheilkunde*, Bd. xxxiii.), stating that Hoffmann drew attention to the fact that the dura mater is often affected by disease of the ear, reports 102 fatal cases of ear disease accompanied by inflammation of the dura, and only 24 fatal cases in which a participation of the dura was excluded.

Hessler also divides cerebral abscess into primary and secondary: primary are those in which no fistulous communication exists between the middle ear and the abscess; secondary are those in which the inflammation of the middle ear is transmitted to the bone and following various channels to the outer surface of the dura mater, loosens the latter and leads to the formation of an abscess: these are the most numerous. In 53 cases of cerebral abscess, 41 were secondary and 12 primary.

Extra-dural abscesses may be produced in three ways, viz., by direct propagation of the tympanic suppuration to the dura mater; by periphlebitis; in the third group the abscess is developed simultaneously with the suppuration in the middle ear. Symptoms of compression observed in cerebral abscesses are wanting in extra-dural abscesses.

Of 41 cases of secondary abscess of the brain, 14 were cured by operation; 27 died. Of 12 cases of primary abscess of the brain, 3 were cured by operation, and 9 died.

NECROSIS OF BOTH COCHLEÆ AND CONSECUTIVE MENINGITIS; DEATH.

E. MAX gives an account of a very rare case of double necrosis of the cochleæ. The patient was a man, twenty-three years old, with chronic double otorrhœa, dating from childhood. About six months previous to seeing Max the right ear became the seat of most active inflammation with severe pain under the auricle; later the pain spread throughout the head. Decrease of hearing to 0, and facial paralysis. About one month before seeing Max the

left ear was attacked by severer acute symptoms. Intense fever with vomiting and pain in left side of head; some increase of hearing, then sudden loss of it with pain, vertigo, intense tinnitus aurium, and finally facial paralysis on the left side. Seven months from first symptoms on the right side the cochlea was thrown off. Three months after the first symptoms on the left side the cochlea was thrown off from it. Soon after this meningitis and death ensued. No autopsy.—*Wiener medicinische Wochenschrift*, Nos. 48–51, 1891.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

FORMANILID: A NEW ANALGESIC IN LARYNGEAL DISEASES.

J. PREISACH found (*Wien. med. Presse*, 1893, No. 10) that, after insufflation, pain in swallowing subsided in a few minutes, and that the effects continued from two to sixteen hours, usually ten to twelve. Palpitation of the heart and depression occurred in one instance, but lasted only a few seconds. With the anæsthesia of the mucous membrane its reflex irritability is likewise subdued. He finds it as active as cocaine, and much more enduring in its effects.

A. BÖKIAI (*ibid.*) recommends it in painful inflammations, as tonsillitis, pharyngitis, etc. M. NEUMANN first found biting and then numbness of the tongue from a 20 per cent. solution, with pallor and analgesia of the mucous membrane, the effects lasting an hour or an hour and a half.

SPONTANEOUS ABSORPTION OF A LARYNGEAL POLYP AFTER TRACHEOTOMY.

THIS case is reported (*St. Petersburg med. Wochenschr.*, 1893, No. 6) by DR. STEMBO. A woman, seven months pregnant, was about being suffocated by a large infra-glottic neoplasm, and her life was saved by a tracheotomy. In the third week thereafter the growth began to diminish in bulk, and had shrunk to a mere fragment within three months, the canula having been withdrawn during the fifth week.

ASPHYXIA FROM CERVICAL ADENO-SARCOMA.

VAN CAMPENHOUT reports (*Semon's Centralbl.*, 1893, No. 9) this case. A hard, nodular, resistant, adherent, and painless malignant tumor, the size of a foetal head, occupied the right pre-auricular, parietal, and submaxillary region, where it had grown rapidly for six months, and compressed both trachea and œsophagus. Despite tracheotomy, performed to prevent asphyxia, death was delayed but a few days.

MALIGNANT GROWTHS OF THE LYMPHATIC GLANDS.

SCHERER reports (*Internat. Centralbl. f. Lar., etc.*, 1893, No. 7) two interesting observations:

1. Male, aged thirty-three years. Malignant lymphoma; a large intra-thoracic tumor; thrombosis in various venous vessels; extension of the growth into the trachea, the right bronchus, and the right auricle. Similar growths in the lymphatic glands of the base of the tongue, and in other localities.

2. Male, aged thirty-two years. Tuberculous lymphoma of the glands of the neck and of the trachea. Tuberculosis of the bronchial glands and of the glands around the kidneys.

FISTULA OF THE TRACHEA.

STRÜBING contends (*Deutsche med. Wochenschr.*, 1892, No. 9) that median fistulæ are usually lateral fistulæ whose external orifices are directed to the median line.

NEUROSIS.

ONODI reports (*Semon's Centralbl.*, 1893, No. 7) a case of apsithyria, or hysteric aphasia, in a man thirty-six years of age.

NASAL ASTHMA.

AMONG the more recent accompaniments of nasal asthma noted, is a case in which this malady alternated with circumscribed œdema of the skin (DR. L. RETHI, *Archives Internat. de Rhin., Lar., etc.*, 1892, No. 16), both subsiding after thorough submucous electric cauterization of turgescient inferior turbinates upon both sides.

CYSTIC HYPERTROPHY OF THE LOWER TURBINATES.

DR. WILHELM ROTH, of Vienna, mentions (*Wiener med. Presse*, 1893, No. 10) two cases of complete occlusion of the nasal passages, in which he found hypertrophy of the entire lower surface of the lower turbinates, which, after operative removal, presented as a nodular tumor with small bladder-like racemose projections, which were determined to be cysts; apparently retention cysts developed from the mucous glands, a variety of hypertrophy that he had not found hitherto described.

MORBID GROWTHS OF THE SEPTUM NARIUM.

DR. SUCHAUNEK, of Zurich, reports (*Semon's Centralbl.*, 1893, No. 7) a pendulous fibroma the size of a cherry hanging from the anterior third of the septum. Macroscopically and microscopically it was a very vascularized tumor, with a pedicle composed almost exclusively of bloodvessels. In his youth the patient had severe epistaxis following a blow on the nose. Four years later there were hemorrhages, recurring daily for a whole month.

WYGODZINSKI, of Waldenburg, reports (*ibid.*; Inaug. Diss. Würzburg) a case of large spindle-celled sarcoma commencing upon the right face of the

septum narium of a man twenty-four years of age, whence it was shelled out after splitting the nose. Recurrence followed, with extension of the growth to the periosteum, and eventually to the connective tissue of the orbit. He also reports a myxo-sarcoma originating in the mucous membrane of the right side of the septum narium, which it perforated.

MORBID GROWTHS OF THE NOSE.

ONODI, of Pest, reports (*Semon's Centralbl.*, 1893, No. 7) a case of sarcomatous growths of the nose following the extirpation of mucous polypi.

MANUAL EXTRACTION OF AN ENORMOUS FIBROUS NASO-PHARYNGEAL POLYP.

PROF. E. ZAUFAL reports (*Prager med. Wochenschr.*, 1893, No. 11) the manual extraction of an enormous growth from the pharynx of a female servant thirty-seven years of age, after failures with various forceps. The mass weighed 112 grammes. It was composed of a large pharyngeal portion, with a long intra-nasal attachment and a sessile outgrowth the size of a walnut at the outer angle of the junction between the pharyngeal and nasal portions. The large pharyngeal mass was 11 centimetres long, and the nasal portion 5 centimetres long; the greatest breadth was 6 centimetres; the thickness 3.5 centimetres, and the circumference 14 centimetres—making it the largest recorded growth of this kind. It was attached apparently to the under surface of the left middle turbinate body, though this could not be accurately determined, but was inferred from the fact that slight bleeding followed on wiping this part with a cotton wad under rhinoscopic illumination. The insertion was marked by a line $\frac{1}{2}$ centimetre in breadth and 5 centimetres in length, reaching from the upper portion of the pharyngeal mass to more than half the length of the nasal mass.

The tumor extended down the pharynx nearly to the orifice of the larynx, and was forcibly drawn up into the mouth, which it nearly filled, reaching as far as the incisor teeth. It was then clasped between the fore and middle fingers and thumb of each hand, and yielded readily to a forcible tug. The hemorrhage was slight, but nasal hemorrhage ensued a few days later, requiring plugging, which was followed by bilateral otitis media with rupture of both tympanic membranes, but which was not followed by any serious sequence.

RETRO-PHARYNGEAL ABSCESS.

CAMPBELL, of Tübingen (*Mittheil. aus d. Tübinger Poliklinik*, 1892, H. 2; *Semon's Centralbl.*, 1893, No. 9), reports the death of a girl, seven and a half years of age, whose malady had evaded exact diagnosis. The autopsy revealed cryptogenetic septicopyæmia, which had apparently resulted from a retro-pharyngeal abscess, which was very small, and was located in the vicinity of the cervical plexus to the right side of the vertebræ, and had produced very evanescent topical symptoms. Pressure upon the plexus appeared to have produced irritation in the musculature of the neck, such as pain in moving the head, and maintaining the head toward the right side.

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

PROFESSOR OF OBSTETRICS AND DISEASES OF INFANCY IN THE PHILADELPHIA POLYCLINIC;

CLINICAL PROFESSOR OF DISEASES OF CHILDREN IN THE WOMAN'S MEDICAL COLLEGE;

CLINICAL LECTURER ON OBSTETRICS IN THE JEFFERSON MEDICAL COLLEGE;

VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL, ETC.

A CASE OF SYMPHYSIOTOMY.

SMYLY, of the Rotunda Hospital, reports, in the *British Medical Journal*, 1893, No. 1687, a case of symphysiotomy in a multipara who suffered from articular rheumatism. She entered the Rotunda Hospital in her tenth pregnancy at the beginning of labor. The true conjugate of the pelvic inlet was found to measure seven and one-half cms.; the uterus was displaced to the left; the child was in the second position, the membranes unruptured. Labor continued slowly without the descent of the head for forty-eight hours. On the evening of the fifth day after the beginning of labor, the cord prolapsed, meconium appeared, and the contraction ring was a hand's breadth above the pubes. The head was freely movable above the brim, but turned transversely. The forceps failed to grasp the head and deliver the child.

In performing the symphysiotomy, the soft parts were divided with the scalpel, and, guided by the finger beneath the symphysis, a probe-pointed bistoury was passed downward and behind the joint. The bone separated rapidly, tearing the soft parts beneath the urethra. The child was easily delivered by expression, was asphyxiated, but recovered. It weighed seven and one-half pounds and measured twenty inches in length. The hemorrhage from the soft parts was controlled by securing a few vessels. The urethra was repaired by catgut suture, the bones brought together, a firm bandage placed about the hips, and the wound closed with silk sutures. Convalescence was delayed by a bed sore. A urinary fistula followed the operation, which was cured by a second operation. Complete recovery finally ensued.

THE TREATMENT OF THE NAUSEA AND VOMITING OF PREGNANCY.

FROMMEL reports, in the *Centralblatt für Gynäkologie*, 1893, No. 16, four cases of obstinate nausea and vomiting of pregnancy treated by orexin. The effect upon all was excellent, although during previous pregnancies some of the patients had been persistently sick. The dose of orexin was five grains given twice or three times daily in wafer or gelatin capsules.

PUERPERAL ARTHRITIS OF THE SACRO-ILIAC JOINTS.

BUDIN reports, in *Le Progrès Medical*, 1893, No. 13, the case of a woman whose first pregnancy had been terminated prematurely, and who had also suffered from typhoid fever and erysipelas. She was admitted to the Charité

during her second pregnancy, complaining of hemorrhage and also of pain about the joints of the pelvis. Her pregnancy terminated spontaneously in normal labor, her pelvic pain continuing acute, although she suffered little during the period of expulsion. Careful examination of the pelvis disclosed arthritis of the sacro-iliac joints. Other and similar cases are also reported.

The diagnosis is made by exclusion and careful examination. The prognosis varies with the case. In certain cases of acute puerperal infection the prognosis is grave. While many cases recovered promptly, some persisted, accompanied by great suffering. The treatment embraced repose and absolute immobility of the pelvis. Constipation must be carefully avoided, especially when the left sacro-iliac joint is involved. External counter-irritants are often useful. If recovery does not ensue, passive movements are sometimes advantageous. The use of mineral waters and of medicated baths is also of advantage.

BIRTH-PALSY, CENTRAL AND PERIPHERAL.

OLIVER reports, under the first title, in the *British Medical Journal*, 1893, No. 1684, two cases of central birth-palsy. In one, labor was difficult; the child was resuscitated, had convulsions, and developed atrophic hemiplegia. The second case was one of precipitate labor, followed by meningeal hemorrhage and death on third day from apparent exhaustion. A third case is mentioned of a boy five years old, suffering from spastic paraplegia.

Peripheral birth-palsy is the subject of a paper by GAY (*ibid.*). He reports a case of brachial palsy in a child aged nine months. There was no evidence of fracture or dislocation of the bones of the upper extremity; a syphilitic history could not be obtained. The patient's treatment consisted of inunctions with mercury and rubbing the arm with oil; later, potassium iodide was given, and, last of all, localized faradization. A second case was that of a child aged three months, delivered by forceps, asphyxiated. The right arm was observed to be paralyzed from the first day. The treatment consisted of faradization and rubbing, under which complete recovery ensued.

The distribution of such paralysis corresponds with what is known as Erb's upper-arm type, in which the deltoid, spinati, biceps, brachialis anticus, and supinators are implicated. So far as treatment is concerned, electricity is best, commenced at an early stage of the disease; it is administered by placing a large electrode over the supra-clavicular fossa and another in the armpit. The galvanic current is also used, the current being passed through the parts successively for about five minutes; this treatment should be continued for several weeks.

GASTRIC HEMORRHAGE DURING PREGNANCY.

ROBERT KOCH, in the *St. Petersburger medicinische Wochenschrift*, 1893, No. 10, reports the case of a primigravida in the third month of gestation, who suffered from gastric ulcer. Hemorrhage was profuse and frequent, and the patient profoundly anæmic; she finally recovered from the bleeding, and was delivered of a healthy child at term.

A second case was that of a patient who had suffered from severe abdominal pain, vomiting, and loss of appetite; during her pregnancy these symptoms

became worse, and the matter ejected from the stomach was brownish-red, and at times black. The patient became profoundly anæmic, but afterward rallied somewhat. Two weeks later she suddenly collapsed after vomiting blood freely. She finally rallied, however, and was shortly afterward delivered of a dead child. Her gastric hemorrhage ceased, and she ultimately made a recovery. The condition of pregnancy, by the increased arterial tension present in the abdomen, strongly predisposes to hemorrhage if the gastric bloodvessels be diseased.

ECTOPIC GESTATION.

CULLINGWORTH, at a recent meeting of the Obstetrical Society of London, reported a case of deranged menstruation, with irregular hemorrhages, swelling of the abdomen, and fœtal movements which gradually ceased. Abdominal section revealed a dead fœtus, nineteen inches long, between the layers of the right broad ligament. The placenta was separated, and the sac stitched to the edges of the abdominal incision. No hemorrhage followed separation of the placenta, although the fœtus had been dead but four weeks. Uninterrupted recovery followed.

PHILLIPS reported the case of a multipara who had spasmodic abdominal pain, derangement of menstruation, the uterus fixed in the pelvis, and an abdominal tumor. Hemorrhage was accompanied by shreddy material; the breasts became painful, but finally softened and grew smaller. Abdominal section revealed a putrid fœtus of six months' growth in the left broad ligament; the patient recovered.

STEVENSON reported three cases: The first, of a woman aged forty years; married seventeen years, but never previously pregnant. The abdomen was much distended, contained fluid and a living fœtus. The patient's pulse was small, her temperature 101°; she died before operation could be performed.

Post-mortem, a cyst was found containing a large fœtus, whilst offensive greenish fluid filled the abdomen; the broad ligaments were apparently normal. A placenta was attached to the fundus of the uterus.

A further case was that of a multipara who had flooding for several days, and a pelvic swelling which was thought to be an ovarian cyst; a hard, nodular tumor, extending two inches above the umbilicus, developed. On abdominal section, a full-sized, living child extracted. The sac was torn, and free bleeding ensued. The sac was drawn up through the abdominal wound, clamped low down with rubber tubing, and then cut away with retained placenta. The stump was fixed at the lower angle of the wound. The patient made a good recovery.

In case third, a multigravida complained of irregular menstruation, flooding, and abdominal tumor. On abdominal section, a large cyst of the broad ligament was seen; its contents, an offensive fluid and dead fœtus, were evacuated. Adhesions were freed, the sac brought out, clamped, and cut off. The patient recovered.

In discussion, DUNCAN urged early operation; if the child was near viability, he would wait and endeavor to save mother and child. He thought it dangerous practice to remove the placenta at the time of operation.

HERMAN distinguished three different conditions of the placenta: It might be completely thrombosed and then easily and safely peeled off. It might

be attached to the broad ligament, when it could be pulled up, its seat of attachment tied, and the placenta cut away like a broad-ligament cyst. The circulation might be still in progress in it, its attachments widely spread over important parts; and then its removal would be dangerous.

RUPTURED TUBAL PREGNANCY.

BYERS reports, in the *British Medical Journal*, 1893, No. 1687, a case seen in collapse from internal hemorrhage. The history was that of obscure signs of pregnancy, with partial collapse occurring some time before, from which the patient had rallied. Acute pain in the left iliac region developed, accompanied by hemorrhage. Abdominal section was delayed by the objections of the patient's friends, but successive attacks of fainting finally induced them to consent. When the abdomen was opened a large quantity of blood-clot and serum were discovered. The left tube was ruptured, and the fœtus and amnion were washed out from among the intestines by irrigating fluid. An interesting point about the case is the occurrence of an attack of collapse and pain a year previous, from which the patient recovered spontaneously.

THE UTILITY OF SYMPHYSIOTOMY.

WEHLE presents a most valuable contribution to the literature of this subject (*Arbeiten aus der königlichen Frauenklinik in Dresden*, Bd. i., Verlag von S. Hirzel, Leipzig, 1893). After a careful review of the arguments advanced for and against the operation, he records the results of his examinations of pelves taken from patients of various ages, and dying under varying conditions. He doubts that ossification of the symphysis often occurs as the result of age. In 10 bodies of women beyond sixty years, ossification of this joint was not found. In examining 60 bodies in only 8 was the joint exactly in the median line; it deflected to the left in 40; to the right in 12. Obtaining a contracted pelvis soon after death, it was fastened to a support and symphysiotomy performed; it was then found that the two halves of the pelvis rotated not only outward, but also downward, thus increasing the pelvic diameters both antero-posteriorly and obliquely. Extraction of the fœtal head increased this depression of the two halves of the pelvis and also the diameters. It should not be performed if the conjugata vera is below 6.5 cm. Morisani places the lowest limit at 6.7 cm. The conditions necessary for success are that the patient must be free from infection; the pelvis must not be ankylosed, or have an extreme oblique contraction; the fœtal heart sounds must be good. It is also desirable that the woman be a multipara, and that the soft parts are sufficiently prepared. A curved, probe-pointed bistoury is recommended for severing the joint, the knife being passed from above and behind to below and forward. In looking for the symphysis, it should be remembered that it is rarely in the median line. The sub-pubic ligament should not be divided, if possible. The fœtal head is then pressed into the pelvis, and labor terminated. During delivery the leg should be extended, and assistants must make counter-pressure against the trochanters. Sutures of strong silk should be passed through the skin and anterior surface of the symphysis. The pelvis should be immobilized by a strong canvas belt.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

THE SENSITIVENESS OF THE PERITONEUM.

TAIT (*Lancet*, January 21, 1893) believes that the peritoneum is exquisitely sensitive, as shown not only by the severe pain experienced by patients during a sudden internal hemorrhage, but by the agony which they suffer when it is necessary to open the abdominal cavity without anæsthesia. Moreover, he has frequently noticed that, on touching the peritoneum in women who were incompletely anæsthetized, reflex movements were frequently produced, indicative of the pain which was experienced. He addressed inquiries to several different abdominal surgeons, many of whom expressed an opinion directly contrary to his own. Sutton believes that while the healthy peritoneum is not especially sensitive, when inflamed it is highly so.

THE ETIOLOGY OF VAGINAL FISTULÆ.

CARL-HOHENBALKEN (*Wiener med. Presse*, 1893, No. 8) calls attention to the fact that a considerable number of cases of vaginal fistulæ are due to the presence of foreign bodies, especially improper pessaries, such as the Zwank variety. He reports two cases, in one of which such an instrument remained in the vagina for sixteen years; when it finally dropped out (the patient being then eighty years old), a vesico-vaginal fistula admitting two fingers was found in the upper part of the vagina. An operation was deemed inadvisable on account of the advanced age. In the case of the second patient, aged sixty-five, who came to the clinic on account of hemorrhage, a glass stopper was found in the vagina, which had been introduced fifteen years ago by a physician (!) on account of prolapsus; when this was removed a large recto-vaginal fistula, two inches long and an inch wide, was exposed.

The writer deduces the lesson that not only should the physician be careful what sort of a pessary he uses, but he should be sure that the patient is not allowed to pass from under his observation without due caution as to the necessity of having the instrument removed.

INGUINAL HERNIA OF THE FALLOPIAN TUBE.

GUINARD (*Bull. de la Soc. Anatomique de Paris*, February, 1893) reports the case of a robust young peasant woman, who since puberty had suffered with severe dysmenorrhœa and memorrhagia. Eight days after a severe confinement she resumed her work in the field; three weeks later she began to suffer with abdominal pain and noticed a painful swelling in the left inguinal region. This gradually increased in size for a year, and finally

became so painful that she was obliged to enter the hospital. On examination a second tumor was felt in the inguinal canal above the first, and was exquisitely tender. The diagnosis of hernia of the ovary and tube was made, which was confirmed, as regarded the latter, when the sac was opened. The tube was traced up to the uterine cornu, ligated and excised; the ovary was also drawn down and removed, after which the hernial sac was excised and the pillars of the ring sutured in the usual manner, the patient making a good recovery.

DECIDUOMA MALIGNUM.

GOTTSCHALK (*Berliner klin. Wochenschrift*, 1893, No. 4) reports the first successful operation for this rare disease, only eight cases of which have been reported, the other seven terminating fatally. Maier reported the first case, but Säger was the first to describe it clearly and call to attention to the fact that it was a distinct form of neoplasm of a well-defined type. He suggested the name *deciduoma malignum* (*sarcoma chorion-deciduo-cellulare*). Another case was described by Pfeifer, and three by Chiari, in which the growth developed at the placental site, appearing as isolated nodules, invading the deeper muscular layer and showing under the microscope a richly vascular connective-tissue stroma, in the interstices of which were groups of large polymorphous epithelioid cells, coarsely granular in appearance. Müller reported a seventh case. In each of the seven there was rapid metastasis, always in the lungs, and the patient succumbed within less than nine months. In none of these cases was a diagnosis made sufficiently early to permit a radical operation. The history of the writer's case was as follows: The patient, aged forty-two years, had had two children and three abortions, the last in 1891. She was curetted after the last abortion and then menstruated regularly until December, when she again became pregnant. On February 10, 1892, she had a sudden profuse hemorrhage and passed bits of decidual membrane. Curettage was performed, and several days later the attending physician found the cervix patent, introduced his finger, and removed a piece of decidual tissue. The patient then had a bloody discharge for six weeks, and in April was again curetted, tissue being removed, which was supposed to be retained decidua. In June she nearly succumbed after a profuse hemorrhage. The physician who was then called found the uterine cavity filled with a reddish, spongy mass, a quantity of which he scooped out with the finger. In spite of another curettage the hemorrhage persisted and the uterus increased in size. The writer saw the patient in July and removed fragments of tissue which, under the microscope, showed sarcomatous degeneration of placental tufts. Although the patient was then in very bad condition from anæmia, total extirpation was performed successfully a month later.

HIGH AMPUTATION VERSUS TOTAL EXTIRPATION.

JESSETT (*Medical Press*, March 15, 1893) compares at length the two operations in cancer of the cervix uteri, drawing largely from American statistics. In arriving at a conclusion he considers four points, viz.: their relative

dangers, the immediate mortality, the periods of freedom from recurrence, and the general results.

Among the dangers of vaginal hysterectomy he notes intestinal obstruction, ligation or injury of the ureters, vesico-vaginal fistula, hemorrhage, and peritonitis, all of which are much less likely to occur after high amputation. The immediate mortality of total extirpation (out of a total of 1273 operations by 38 surgeons) he estimates at 15 per cent.; while in 471 cases of high amputation there was only one death, so that the immediate risk of the latter operation is practically *nil*.

As regards the relative freedom from recurrence, he calls attention to the fact that when the disease is recognized at a sufficiently early stage the patient can be cured by one operation as well as by the other, so that it would seem wiser to choose the minor one.

In concluding, he prophesies that high amputation will be practised more generally, even by surgeons who are now opposed to the operation, and that total extirpation will be limited to those cases in which the disease is situated in the body of the uterus.

SUTURING THE URETERS.

TREKAKI (*Gaz. des Hôpitaux*, 1892, No. 62) infers from experiments upon animals, as well as from the cases reported by Pozzi and Le Dentu, that patients do better when the proximal end of a wounded ureter is stitched into the abdominal wound than when it is turned into the rectum or vagina, since in the latter case infection may be carried to the renal pelvis, causing pyelitis.

He suggests that in cases of suppuration of the kidney, instead of extirpating the organ, it should be exposed by the usual lumbar incision, and the ureter drawn out and divided, after ligating the distal portion, the proximal end being stitched into the wound. This operation would be indicated in cases of inoperable pelvic tumors compressing the ureter, after traumatic rupture of the duct, and even in cases of severe cystitis, in order to protect the kidneys (?).

Note to Contributors.—All contributions intended for insertion in the Original Department of this Journal are only received *with the distinct understanding that they are contributed exclusively to this Journal*.

Contributions from the Continent of Europe and written in the French, German or Italian language, if on examination they are found desirable for this Journal, will be translated at its expense.

Liberal compensation is made for articles used. A limited number of reprints in pamphlet form, if desired, will be furnished to authors in lieu of compensation, *provided the request for them be written on the manuscript*.

All communications should be addressed to

DR. EDWARD P. DAVIS, 250 South 21st Street, Philadelphia, U. S. A.

Or

DR. HECTOR MACKENZIE, 77 Lambeth Palace Road, S. E., London, Eng.

INDEX.

- A**BDOMEN, penetrating wounds of, 586
 Abdominal tumors, traction as an aid in removal of, 106
 Abscess, cerebral, 538
 sub-phrenic, 90
 Acromegaly in an infant, 350
 with remarks on the pathology of the affection, 268
 Actions of antipyrine, phenacetine, and phenocoll on the circulatory and heat phenomena, 89
 Acute purulent ophthalmia, 214
 tonsillitis and pharyngitis, 189
 Addison's disease with tuberculosis of suprarrenal bodies, 91
 Agathin, 458
 Albuminuria and Bright's disease, 1
 Alopecia, treatment of, 209
 Alumol, 184
 Amœbæ in an abscess of jaw, 95
 Anæmia caused by anchylostomum duodenale, 352
 of hereditary syphilis, 108
 treatment of pernicious, 94
 Anæsthesia, recent researches in, 187
 review of cases of, 200
 Aneurisms, ligation of arteries for, 585
 Augina pectoris, dangerous medication in, 183
 Aorta, double aneurism of, 580
 Aortic disease, digitalis in, 191
 Aphasia from otitic cerebral abscess, 710
 Appendicitis, recurrent, 202
 Arsenic as a prophylactic, 315
 Arterial thrombosis following influenza, 326
 venous nœvi, excision of large, 583
 Arthritis of hip, acute, 228
 puerperal, of sacro-iliac joint, 724
 Articular gout in a child, 482
 Artificial respiration in asphyxia neonatorum, 601
 Asaprol, 86
 Ascites, treatment of, 191
 Aseptic operating, dry, 654
 Asiatic cholera, 659
 Asphyxia from cervical adeno-sarcoma, 721
 Asthma, dangers of smoke powders in, 318
 nasal, 722
 Atresia, rectal and anal, 702
 Attic suppuration, treatment of, 207
- B**ACILLUS *aërogenes capsulatus*, 197
 Bacterium coli commune in contents of a panaris in course of enteric fever, 694
 Bezoldt mastoiditis, so-called, 718
 Biggs, history of recent outbreak of epidemic cholera in New York, 63
 Birth-palsy, 725
 Blackwater fever, West African, 462
 Bladder, erysipelas of, 196, 329
 innervation of, 345
 lactic fermentation in, 574
 tamponing of, 591
 tumors of, 466
 Blake, neuroses and arthropathies: are they related? 536
 Blindness during lactation, 597
 Blood, salol and salicylic acid in, 570
 Bone, primary carcinoma of, 701
 Bone suturing, improved technique in, 703
 Brain-abscess from acute otitis media, 713
 otitic, 714
 cystic tumor of, 620
 injuries, mechanism of, 467
 surgery of, 710
 wounds, treatment of, 703
 Bridge, convulsions of infancy and childhood, 301
 Bright's disease and albuminuria, 1
 Brown-Séquard's paralysis after influenza, 579
 Bulkley, internal treatment of lupus erythematosus with phosphorus, 393
 Burns, death after, 589

- CÆCUM**, resection of, 199
 Cæsarean operation for contracted pelvis, 602, 603
 Cæsarean section for rhachitic deformity, 602
 Cancer of portio, 349
 psorosperms in, 594
 Carcinoma of bone, 701
 primary, of common choledoch duct, 323
 Cardiac affections, gymnastics and massage in, 319
 dropsy, treatment of, 452
 Cascarine, 686
 Castration for functional neuroses, 605
 Cataract, congenital, 213
 Cattle, tuberculosis among, 612
 Caven, diffuse tubercular hepatitis with tubercular pericarditis, 511
 Cavity of Ritzius, abscess of, 577
 Cellulose, glue-covered, 706
 Cerebral abscess, 712, 713, 538
 injury, case of, 590
 surgery, 361
 Cerebrum, abscess of, 715, 716
 Chancre of lip, 334
 Cheilitis glandularis, 595
 Childhood, convulsions of, 301
 Chloralose, 454
 Chloroform collapse, treatment of, 457
 physiological action of, 455, 456
 poisoning by, 457
 Chlorosis, treatment of, 686
 Cholera and lactation, 218
 and pregnancy, 343
 Asiatic, 659
 etiology of, 355
 at St. Petersburg, 315
 bacillus, viability of, on various food-stuffs, 357
 blood-serum of convalescents from, 576
 disinfection in, 358
 during pregnancy, 217
 epidemic in Havre, 231
 in Kashmir, 232
 epidemics, disinfection in, 233
 Haffkine's method of vaccination against, 565
 in Altona Hospital, 89
 in children, treatment of, 353
 in Hamburg, 109
 in New York, 58, 63, 72
 protective inoculation against, 458
 salol in, 569
 specific treatment of, 695
 Cholera, treatment of, by the naphthols, 388
 Chorea, arsenic in, 574
 drugs used in, 563
 Chronic gastritis, resorcin in, 451
 Chylous ascites in an infant, 351
 Circumbulbar dermoid cysts, 213
 Cirrhosis of liver, 191
 Cocaine in varioloid infection, 298
 Cod-liver oil therapy, 570
 Cœliotomy, asepsis in, 349
 for peritoneal adhesions, 604
 versus laparotomy, 348
 Coley, treatment of malignant tumors by repeated inoculations of erysipelas, 487
 Compressed gases, medical use of, 319
 Contagion, dangers of, 209
 Convulsions of infancy and childhood, 301
 Cough, spasmodic, 538
 Cranial deformity and optic-nerve atrophy, 529
 Craniectomy, cases that should be operated upon by, 613
 Cretinism treated by hypodermic injection of thyroid extract and by feeding, 692
 Crook, diagnostic significance of venous and arterial murmurs in the neck, 167
 Cunei-hysterectomy, 348
 Cut throat and surgical wounds of air-passages, sutures in, 582
 Cyst of pancreas, 607
 Cystic hypertrophy of lower turbinates, 722
 tumor of brain, 620
 of fetal neck complicating labor, 475
 Cystitis, gas-generating bacillus in urine of
 of a case of, 325
 tubercular, 202
 Cysto-adenoma, peritoneal, 545
 Cystocele in inguinal kelotomy, 587
 torsion of a, 223
 Cysts, traumatic epidermal, 469
- D**A COSTA, albuminuria and the Bright's disease of uric acid and oxaluria, 1
 Deciduoma malignum, 729
 Delirium, alcoholic, treatment of, 565
 Dercum, two cases of acromegaly, 268
 Dermatitis gangrenosa infantum, 471
 herpetiformis, 594
 Dermatol as a local remedy, 210
 harmlessness of, 88
 in dermatological practice, 470

Diabetes associated with atrophy of pancreas, 578
 benzosal in, 571
 following influenza, 463
 mellitus, injections of liquor pancreaticus in, 687
 salol in, 688

Diarrhœa, strychnine and digitalis in, 83

Diehl, oleo-creasote of, 681

Digitalinum verum, 185

Diphtheria, 338

peroxide of hydrogen in, 190

tracheotomy for, 100

and intubation in, 701

Diphtheritic paralysis, with temporary absolute deafness, 692

Disinfection in cholera epidemics, 233

Dodwell, thrombosis of the femoral vein in phthisis, 641

Dropsy, cardiac, treatment of, 452

Dry aseptic operating, 654

Dührssen's operation for retroflexion, 344

Dunham, bacteriological examination of the recent cases of epidemic cholera in New York, 72

Dysidrosis and cheiropompholyx, 470

EAR, acute inflammation of, 207

Earache and acute middle-ear inflammation, 127

Eclampsia, pathology and prognosis of, 103

Ectopic gestation, 216, 725

Eczema, thilanine in, 212

Edebohls, movable kidney; with a report of twelve cases treated by nephrorrhaphy, 247, 417

Elbow-joint, old luxations of, 202

Elephantiasis of scalp, 120

Eleven months' monster with congenital tuberculosis, 342

Emphysema, subcutaneous, 580

Endometrium, pathology of, 479

Epilepsy, new agent in treatment of, 684

Epithelioma of corporeal endometrium, 348
 of lip, excision of, 587

of œsophagus, 464

of transverse colon, 588

Eruptions, post-vaccinal, 593

Erysipelas of bladder, 196, 329

repeated inoculations of, in treatment of malignant tumors, 487

Ether dipsomania, 186

Enphorine, 84

Europhen as a local dressing, 592

FEMUR, irreducible dislocation of, 586
 sub-pubic luxation of left, 203

Fenwick, production of first cardiac sound in mitral stenosis, 123

Fevers, chloralamid in insomnia of, 686

Fibro-myoma of pelvic connective tissue, 221

of uterus, 478

Fistula-in-ano, suture of sphincters in operation for, 709

of trachea, 722

Fœtal urinary bladder, distention of, 600

Formanilid in laryngeal disease, 721

Friedenwald, cranial deformity and optic nerve atrophy, 529

GALL-BLADDER, surgery of, 590

-stone, intestinal occlusion by a, 587

Garrigues, symphysiotomy, 286, 399, 441

Gastritis, chronic, resorcin in, 451

Gastro-enterostomy, 330

Genu valgum, operative treatment of, 201

Gerster, report of a case of cystic tumor of the brain operated upon with success, 620

Glaucoma, the disease-process, 627

Gonorrhœa in the female, 605

Gonorrhœal ophthalmia occurring in utero, 221

Gout of intestines, 461

Grandin, clinical contribution to subject of symphysiotomy, 517

Gray, cases that should be operated upon by craniectomy, 613

Gynecology, ichthyol in, 603

HÆMATOMA of sterno-mastoid muscle in newborn, 103

Hæmaturia, quinine in malarial, 86

Hæmoptysis, treatment of, 315, 571

Hamburg, cholera in, 109

Hämol and hämogalloi, 456

Havre, cholera epidemic in, 231

Hearing, remarkable improvement in, 205

Heart, aberrant tendons of, 689
 irregular, 193

Heaton, cerebral abscess following the operation of trephining for compound depressed fracture of skull, 538

Hemi-hypertrophy, 463

Hemorrhage, treatment of post-partum, 343

Hemorrhages, rebellious, treatment of, 83

Hemorrhagic encephalitis, acute, 696

Hepatic colic, treatment of, 704

Hepatitis, diffuse tubercular, 511

- Hernia, diaphragmatic, 101
 gangrenous, 98
 inguinal, in female, 331
 radical cure of, 107
 strangulated, 203
 Herniæ, radical cure of crural, 97
 Hepatic cirrhosis, 459
 colic, treatment of severe, 190
 Hiccough, treatment of, 317
 High amputation *versus* total extirpation, 729
 Horse-nettle, 315
 Human milk, effects of quinine upon, 219
 Humerus, paralysis in fractures of, 99
 Hydrosalpinx, etiology of, 223
 Hydrotherapy in nervous diseases, 132
 Hyperæsthesia produced by application of cocaine, 215
 Hypertrophic endometritis, 105
 Hysterical rapid respiration, 235
- I**CE-BAG as a therapeutic agent, 190
 Ileo-sigmoidostomy, 333
 Ilium, resection of entire, 100
 Induction of premature labor by Champétier de Ribes's bag, 476
 Inebriety, treatment of, 186
 Infectious disease, changes in heart muscle in, 359
 transmission of, 358
 Influenza, colorless corpuscles of the blood in, 696
 diabetes following, 463
 Inguinal hernia of Fallopiian tube, 728
 Inhibitive functions of glandular secretions on some chronic diseases, 697
 Insane, use of hypnotism among, 313
 Intermittent fever, treatment of, 455
 gastric hypersecretion in an ataxic, 694
 Intestinal adhesions after laparotomies, 330
 occlusion, 206
 Intra-cranial abscesses of otitic origin, 714
 surgery, 705
 uterine fibroids, enucleation of, 106
 injections of glycerin in labor, 216
 -venous transfusion of artificial serum in cholera patients, 86
 Iodine, carbolic acid, and chloral in dermatology, 472
 Iris, prolapse of, 214
 Ischio-pubiotomy, 600
 Is symphysiotomy justifiable where fœtus has perished? 476
- J**OINT disease in syringo-myelia, 709
- K**ASHMIR, cholera epidemic in, 232
 Keratosis follicularis, 210
 Kidney, movable, 247, 417, 702
 prolapse of left, 582
 Knee, fixation after excision of, 277
 -jerks and peripheral neuritis in diabetes, 321
- L**ABORS without internal disinfection, 599
 Labyrinthine and middle-ear disease, 208
 Lamb, the Meckel diverticulum, 633
 Laminectomy for paraplegia due to angular curvature, 707
 Laparotomy, explorative, 351
 Laryngeal polyp, spontaneous absorption of a, 721
 Laryngectomy, 465
 Larynx, carcinoma of, 339
 death from heart failure after extirpation of, 339
 extirpation of right side of, 339
 morbid growths in, 338
 Leale, Asiatic cholera, 659
 Leeds, a question of water, ethics, and bacteria, 259
 Lepra and its bacillus, 595
 Leprophobia, 594
 Leprosy: its nature and care, 472
 visceral tuberculosis of, 699
 Leucocythæmia, 484
 Lichen ruber, vesicular form of, 209
 Liver, diminution in size of, 326
 enormous cyst of, 576
 hypertrophic cirrhosis of, calomel in, 319
 in childhood, 228
 Losophan, 88
 Lumbo-sacral spina bifida, 709
 Lung, emphysema of, 608
 Lupus erythematosus, 393, 594
 Lusk, case of symphysiotomy, 441
 the tampon in menorrhagia, 37
 Lymphatic glands, malignant growth of, 722
 tubercle-bacilli in, 325
- M**CBURNEY, a contribution to cerebral surgery, 361
 McIntosh, laparotomy and removal of cystic tumor of peritoneum, 545

McPhedran, diffuse tubercular hepatitis with tubercular pericarditis, 511
 Magalhaes, congenital elephantiasis of scalp, 120
 Malaria, parasites of, 577
 quinine in, 567
 Malarial fever, helianthus annuus in, 567
 Mammæ, hypertrophy of, 200
 Mania, acute, from inhaling carbon bisulphide, 569
 Manson, congenital elephantiasis of scalp, 120
 Massage in megrim, 186
 Maxilla, operations on superior, 100
 Maxillary sinus, suppuration in, 335
 Measles, second attack of, 484
 Meckel diverticulum, 623
 Menorrhagia, tampon in, 37
 Menstruation and pregnancy, 606
 Middle ear, chronic suppuration of, 207
 Mitchell, hysterical rapid respiration, 235
 Mitral stenosis, first cardiac sound in, 123
 Morphinomania, treatment of, 685
 Movable kidney, 247, 417
 pelvic troubles due to, 106
 Mumford, dry aseptic operating, 654
 Murmurs in neck, 167
 Myelitis after gonorrhœa, 460
 Myomotomy, 105
 Myopia the result of constitutional disease, 596
 Myositis ossificans, 611
 Myxœdema, treatment of, 461

NAPHTHOLS in cholera, 388
 Nasal passages, morbid growths in, 336
 Naso-pharyngeal polyp, extraction of a, 723
 Neck, murmurs in, 167
 Necrosis of both cochleæ and consecutive meningitis, 720
 of fatty tissue, 329
 osteoplastic operation for, 591
 Neoplasms, inoperable malignant, 314
 Nephritis, chronic, cantharides in, 453
 Nephrotomies, renal wounds after, 99
 Nervous and mental diseases, hydrotherapy in treatment of, 132
 Neuralgia, trifacial, operative treatment of, 708
 Neuroses and arthropathies, 536
 Neurosis, 722

Newborn, bacteriological examinations in, 605
 Newmark, study of the family form of spastic paraplegia, 432
 New York, cholera in, 58, 63, 72
 Nipple, Paget's disease of, 212
 Nitro-hydrochloric acid, administration of dilute, 682
 Noma in an adult, 93
 Nose, morbid growths of, 723
 Nursing mothers, use of purgatives with, 600

OBSTETRIC practice, electricity in, 342
 Œdema, subacute pulmonary, 193
 Œsophagotomy, external, 204
 Œsophagus, epithelioma of, 464
 Ointments, penetration of, 592
 Oleo-creasote of Diehl, 681
 Operating, dry aseptic, 654
 Osler, tuberculous pericarditis, 20
 Osteomalacia during pregnancy, 599
 Osteomyelitis of pubes, acute, 225
 Otitic cerebral abscess, 711
 Otitis, cerebral complications of, 714
 pain in, 127
 extra-dural abscess following, 720
 media, acute purulent, 715, 717
 Otorrhœa, chronic, 712
 Ovariectomy in Japan, 603
 Ovary, dermoid cyst of, 221
 human, nerve fibres in, 224
 Overend, production of first cardiac sound in mitral stenosis, 123
 Ovum, internal crossing of, 476

PALSY, birth-, 725
 Pancreatitis, chronic interstitial, 328
 with hemorrhage, 322
 Papoid digestion, 452
 Paralysis, diphtheritic, 692
 of diaphragm in posterior spinal sclerosis, 693
 Paraplegia, spastic, 432
 Parasitic protozoa in cancerous tumors, 332
 Park, pseudarthrosis, 521
 Pediculi capitis as a cause of pruritus vulvæ, 473
 pubis upon scalp, 209
 Pelvic organs, action of morphine on, 604
 suppuration, treatment of, 479
 Pemphigus, 594
 of oral and pharyngeal mucous membrane, 336

- Pemphigus puerperalis et neonatorum, 593
 Pepper, cocaine in treatment of variolous and varioloid infection, 298
 Pericarditis, ice-bag in, 568
 tubercular, 20
 Pericystitis, 345
 Peripheral neuritis in typhoid fever, 571
 Peritomy in phlyctenular pannus and keratitis, 215
 Peritoneal cysto-adenoma, 545
 Peritoneum, sensitiveness of, 728
 Peritonitis, 347
 laparotomy in tubercular, 229
 Perityphlitis, surgical treatment of, 332
 Pertussis, bromoform in, 226
 Peterson, hydrotherapy in treatment of nervous and mental diseases, 132
 Pharynx, adenoid growths in, 337
 tuberculous ulceration of, 320
 Phlegmonous gastritis, 90
 Phenosalyl, 688
 Phosphorus-poisoning, blood in, 459
 several antidotes to, 453
 Phthisis, venous thrombosis in, 641
 Pityriasis rubra pilaris, 208
 Plaques muqueuses, treatment of, 569
 Pleurisy, etiology of, 609
 salicylates in, 568
 Pneumonia, chloride of calcium in, 682
 croupous, complicated by purpura hæmorrhagica, 463
 followed by induration, 96
 injections of blood in, 572
 intra-venous injections in, 318
 Pregnancy, cholera during, 217
 gastric hemorrhage during, 725
 nausea and vomiting of, 724
 tubal, 726
 Premature sexual development in connection with ovarian tumors, 606
 Presystolic murmur, 123
 Primary sciatica, 698
 Prostatectomy, 102
 hemorrhage after, 467
 Protective inoculation against cholera, 458
 Pseudarthrosis, 521
 Psorospermiosis, present status of, 472
 Psycho-therapeutics, theory of, 187
 Ptomaine poisoning, 194
 Ptyalism, treatment of, by pyoktanin, 683
 Puerperal eclampsia, 219
 gonorrhœa, 474
 sepsis, 220
 state, bacteriology of, 598
 Pulmonary congestion of intestinal origin, treatment of, 682
 Pyæmia following suppuration of middle ear, 206
 Pyelophlebitis, suppurative, following appendicitis, 327
 Pyo-pneumothorax, subphrenic, 704
 Pyosalpinx, extirpation of, 222
- R**ANDALL, earache and acute middle-ear inflammation, 127
 Rectum, cure of prolapse of, 539
 Reiche, cholera in Hamburg, 109
 Renal wounds after nephrotomies, 99
 Retro-pharyngeal abscess, 723
 Reviews—
 Allen, The Mastoid Operation, 557
 Baker, Harris, Kirkes' Handbook of Physiology, 561
 Bell, Medico-Legal Studies, 311
 Boyce, Text-book of Morbid Histology for Students and Practitioners, 444
 Canfield, Hygiene of the Sick-room, 182
 Chadwick, Temperament, Disease, and Health, 82
 Crocker, Diseases of the Skin, 442
 Dana, Text-book of Nervous Diseases, 671
 Gowers, Syphilis and the Nervous System, 558
 Gray, Nervous and Mental Diseases, 303
 Greig-Smith, Abdominal Surgery, 179
 Guy's Hospital Reports, London, 310
 Keen, White, American Text-book of Surgery for Practitioners and Students, 174
 Lucas-Championnière, Radical Cure for Hernia, 177
 Marcy, Anatomy and Surgical Treatment of Hernia, 669
 McClellan, Regional Anatomy in Relation to Medicine and Surgery, 308
 Miller, Micro-organisms of the Mouth, 443
 Minot, Human Embryology, 448
 Noeggerath, Structure and Development of Carcinoma, 551
 Ott, Modern Antipyretics, 449
 Parkes, Hygiene and Public Health, 560
 Pozzi, Treatise on Clinical and Operative Gynecology, 676

Reviews—

- Roberts, Chemistry and Therapeutics of Uric Acid Gravel and Gout, 307
 Schäfer, Essentials of Histology, 81
 Shoemaker, Diseases of the Skin, 180
 Smith, Davis, Naphey's Modern Therapeutics, 555
 Sternberg, A Manual of Bacteriology, 674
 Swanzy, Handbook of the Diseases of the Eye and their Treatment, 678
 Taylor, Medical Jurisprudence, 446
 Treves, Handbook of Surgical Operations, 306
 Trimble, Practical and Analytical Chemistry, 562
 Wethered, Medical Microscopy, 450
 Wilson, Hygiene and Sanitary Science, 561
 Rheumatism, chronic, treatment of, 84
 Rhythme de déclanchement as a prognostic sign, 227
 Richardson, dry aseptic operating, 654
 Richey, the disease-process, glaucoma, 627
 Roberts, cure of complete prolapse of rectum by posterior proctectomy, 539
 Rubber, injurious constituents of, 230
 Rubella, morbillous form of, 483
 Rupial skin disease, peculiar form of, in an hysterical woman, 235

SALOL in the organism, 189
 Salophen, 88

- St. Petersburg, cholera at, 315
 Sarcoma of choroid, 212
 of soft palate, 337
 Scalp, elephantiasis of, 120
 Scarlatinal nephritis, diuretin in, 481
 Sciatica, primary, 698
 Scrofulosis, creasote in, 206
 Sensation, disturbances of, 690
 Septum narium, morbid growths of, 722
 Skin and genital diseases, trichloracetic acid in, 212
 diseases, plasters in, 211
 elastic tissue of, 210
 Skull deformity, 529
 Spastic paraplegia, 432
 Spina bifida, 700
 lumbo-sacral, 709
 Spinal cord, surgery of, 98
 Spine in Pott's disease, deviation of, 331
 Spleen, abscess of, 102
 extirpation of, 223

- Staphylococci purulenta cutanea, 473
 Starr, a contribution to cerebral surgery, 361
 Sterilization of iodoform emulsions, 101
 Sternberg, bacteriological report on cholera, 388
 Stewart, prevention and treatment of cholera by the naphthols, 388
 Stieglitz, report of a case of cystic tumor of the brain operated upon with success, 620
 Stomach, spontaneous rupture of, 464
 Stone in kidney, piperazine in treatment of, 452
 Strontium, iodide of, 314
 Sublimate, poisoning by, 85
 Superficial dissecting œsophagitis, 92
 Suppurative periostitis in a case of bronchopneumonia, 483
 Surgery, cerebral, 361
 intra-cranial, 705
 Surgical cases and methods, 39, 140
 Suturing the ureters, 730
 Sweat, reaction of normal, 471
 Symphysiotomy, 286, 399, 441, 517, 724
 anatomical results of, 340
 Esmarch's bandage in, 341
 four and one-fourth years after a Cæsarean section, 475
 thirteen cases of, 340
 utility of, 727
 Syphilide, pigmentary, 596
 Syphilis, anæmia of hereditary, 108
 and eclampsia, 218
 blood elements in, 593
 dog's serum in, 192
 hereditary, affections of testicle in, 19
 pulmonary, 575
 tardiva, 473
 Syphilitic and rhachitic children, 225
 myxœdema, 592

- T**ABES dorsalis, treatment of, 683
 Tampon in menorrhagia, 37
 Tenotomy by the old method, 15
 Tetanus, treatment of, 188, 189, 316
 Therapeutic papers, 192, 572
 Thiosinamine, action of, 596
 Thiuret, 687
 Thrombosis of the femoral vein in phthisis, 641
 Thumb, irreducible luxation of, 699
 Thymacetine, action of, 564
 Tinea favosa contracted from animals, 595
 Tolyppyrin, 685
 Tongue, accessory, 337

- Tongue, tuberculosis of, 337
 Tracheotomy for diphtheria, 100
 Treves, tenotomy by the old method, 15
 Trional as an hypnotic, 87
 Triple ectopic gestation, 475
 Tropacocaine, 687
 Tubal abortions, 219
 moles, 219
 pregnancy, ruptured, 726
 Tubercular adenitis, treatment of, 85
 hepatitis, 511
 pericarditis, 20
 Tuberculosis among cattle, 612
 of placenta, 601
 senile, 333
 treatment of, 317
 Tuberculous peritonitis, 320
 Tumors, callous, 202
 removal of cerebral, 199
 surgical intervention in, 589
 Typhoid fever in children, 207
 sublimate in internal treatment
 of, 568
 Typhlotomy, temporal, 700
- U**LCER, rodent, cure of, 211
 Ureters, suturing the, 730
 Urethra, fistula of, urethroplasty in, 704
 partial resection of perineal, 469
 stricture of, 346
 Uric acid vesical calculus, 335
 Urinary infection by the bacterium coli
 commune, 482
 Uterine fibro-myoma, biology of, 606
 cancerous degeneration of, 348
 fibro-myomata, enucleation of, 106
 Uterus, extirpation of cancerous, 477,
 607
 retroflexion of pregnant, 217
- Uterus, rigidity of neck of, 220
 rupture of, 341
- V**AGINAL fistulæ, etiology of, 728
 hysterectomy, 105, 607
 hysteropexy, 224
 Valvular lesions of heart and pulmonary
 tuberculosis, 94
 Variola, blood corpuscles in, 93
 Varioloid infection, cocaine in, 298
 Venereal affections, albuminuria in, 334
 Venous thrombosis in phthisis, 641
 Vento-fixation and Alexander's operation,
 224
 Version by grasping one leg of fœtus, 475
 Vesical hemorrhage by supra-pubic cyst-
 otomy, 581
 Vesico-vaginal fistula, ischio-rectal incision
 in, 605
 Visceral tuberculosis of leprosy, 699
- W**ATER, ethics, and bacteria, 259
 new method of purifying, 588
 West African "blackwater" fever, 462
 White, methods and results in cases of
 tubercular disease, aneurism, ununited
 fractures, and head injuries, 39, 140
 Whooping-cough, bromoform in, 683
 sodium sozoiodol in, 567
 Wilcox, cholera of 1892 in New York: its
 prophylaxis and treatment, 58
 Wilson, fixation after excision of knee, 277
 Wood, methods and results in cases of
 tubercular disease, aneurism, ununited
 fractures, and head injuries, 39, 140
 Wounds, antiseptic management of, 583
- X**ANTHOMA multiplex in a child, 471
 Xeroderma pigmentosum, 472

THE BEST ANTISEPTIC OR BOTH INTERNAL AND EXTERNAL USE. **LISTERINE.**

Non-Toxic, Non-Irritant, Non-Escharotic—Absolutely Safe, Agreeable and Convenient.

FORMULA.—LISTERINE is the essential antiseptic constituent of Thyme, Eucalyptus, Baptisia, Gaultheria and Mentha Arvensis, in combination. Each fluid drachm also contains two grains of refined and purified Benzo-boracic Acid.
DOSE.—Internally: One teaspoonful three or more times a day (as indicated), either full strength, or diluted, as necessary for varied conditions.

LISTERINE is a well-proven antiseptic agent—an antizymotic—especially useful in the management of catarrhal conditions of the mucous membrane, adapted to internal use and to make and maintain surgical cleanliness—asepsis—in the treatment of all parts of the human body, whether by spray, injection, irrigation, atomization, inhalation, or simple local application, and therefore characterized by its particular adaptability to the field of

PREVENTIVE MEDICINE—INDIVIDUAL PROPHYLAXIS.

LISTERINE destroys promptly all odors emanating from diseased gums and teeth, and will be found of great value when taken internally, in teaspoonful doses, to control the fermentative eructations of dyspepsia, and to disinfect the mouth, throat and stomach. It is a perfect tooth and mouth wash,
INDISPENSABLE FOR THE DENTAL TOILET.

DISEASES OF THE URIC ACID DIATHESIS.

LAMBERT'S LITHIATED HYDRANGEA.

RENAL ALTERATIVE—ANTI-LITHIC.

FORMULA.—Each fluid drachm of "LITHIATED HYDRANGEA" represents thirty grains FRESH HYDRANGEA and three grains of CHEMICALLY PURE Benzo-Salicylate of Lithia. Prepared by our improved process of osmosis, it is INVARIABLY of DEFINITE and UNIFORM therapeutic strength, and hence can be depended upon in clinical practice.
DOSE.—One or two teaspoonfuls four times a day (preferably between meals.)

These clinical observation has caused Lambert's Lithiated Hydrangea to be regarded by physicians generally as a very valuable Kidney Alterative and Anti-lithic agent in the treatment of

Urinary Calculus, Gout, Rheumatism, Cystitis, Diabetes, Hæmaturia, Bright's Disease, Albuminuria, and Vesical Irritations Generally.

REALIZING that in many of the diseases in which LAMBERT'S LITHIATED HYDRANGEA has been found to possess great therapeutic value, it is of the highest importance that suitable diet be employed, we have had prepared for the convenience of physicians

DIETETIC NOTES,

suggesting the articles of food to be allowed or prohibited in several of these diseases. A book of these Dietetic Notes, each note perforated and convenient for the physician to detach and distribute to patients, supplied upon request, together with literature fully descriptive of LISTERINE AND LAMBERT'S LITHIATED HYDRANGEA.

LAMBERT PHARMACAL CO., St. Louis, U. S.

British, Canadian, French, Spanish, German and South American Trade Constantly Supplied.

PEACOCK'S BROMIDES

(SYR: BROM: COMP: PEACOCK.)

Each fluid drachm represents 15 grains of the Combined C. P. Bromides Potassium, Sodium, Calcium, Ammonium and Lithium.

Uses: Epilepsy, Uterine Congestion, Headache, and all Congestive, Convulsive and Reflex Neuroses.

This preparation produces results which can not be obtained from the use of commercial Bromide substitutes.

DOSE.—One to two FLUID drachms, in WATER, three or more times a day.

CHIONIA FROM CHIONANTHUS

Uses: Biliousness, Jaundice, Dyspepsia, Constipation, and all Diseases Caused by Hepatic Torpor.

CHIONIA stimulates the Liver and restores it to healthy condition, without debilitating the system by Catharsis; does not purge, per se, but under its use the Liver and Bowels gradually resume their normal functions.

DOSE.—One Fluid Drachm three times a day.

SAMPLES SENT TO ANY PHYSICIAN WHO WILL PAY EXPRESS CHARGES.

PEACOCK CHEMICAL CO., - ST. LOUIS

CACTINA PILLETS.



Indicated in abnormal heart action, mental depression, and general debility.

Cactina is the best cardiac and general tonic in the materia medica, and, therefore, indispensable in the treatment of every form of weakness.

Each Pilet represents one one-hundredth of a grain of Cactina—the active proximate principle of Cactus Mexicana.

DOSE.—One Pilet every hour, or less often, as indicated.

PRICE, PER BOTTLE (100 PILLETS), 25 CENTS.

Samples Mailed Free to any Physician Sending His Address

SULTAN DRUG CO., St. Louis and London

Scott's Emulsion.

Always Sweet, Always in Full Strength, Always Ready For Use.

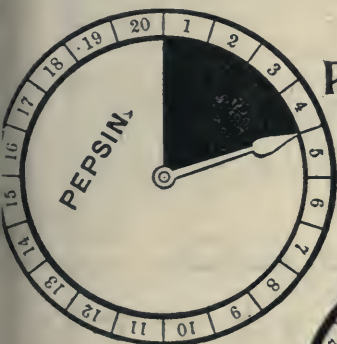
No one knows quite so well as the physician how much depends upon these conditions in Cod Liver Oil. The superiority of Scott's Emulsion is not limited to taste, digestibility, ease of assimilation—tests, under the widest possible range of climatic influence, have shown that no other preparation of cod liver oil is so *permanent*—so *trustworthy*. The perfect incorporation of hypophosphites with glycerine, gives this preparation a wider range of usefulness than had from plain oil.

FORMULA: 50% of finest Norwegian Cod Liver Oil; 6 grs. Hypophosphite of Lime; 3 grs. Hypophosphite of Soda to the fluid ounce.

SAMPLE of Scott's Emulsion delivered free to the address of any physician in regular practice.

Prepared by SCOTT & BOWNE, Chemists.

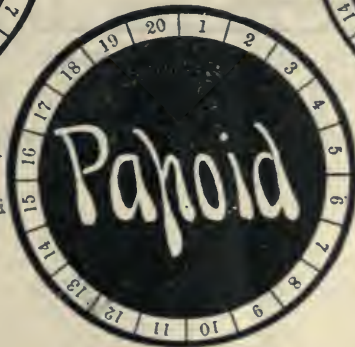
132 South Fifth Avenue, New York.



PEPSIN

acts in the stomach only
(acid medium)
Is destroyed by the alkali
of the intestines.
Possible time of action
2 to 4 hours.

FACTS REGARDING DIGESTIVE AGENTS



PANCREATIN

acts in the intestines only
(alkaline medium)
Is destroyed by the acids
of the stomach.
Possible time of action
8 to 12 hours.

Panoïd

Acts throughout entire alimentary tract, from mouth to anus.
Has marked proteolytic action in acid, alkaline and neutral solutions.
R. H. CHITTENDEN, PH. D., Prof. Phys. Chem., Yale Univ.
Possible time of action over 20 hours.

JOHNSON & JOHNSON, Manufacturing Chemists, - NEW YORK

BROMIDIA.

Each fld. dr. contains 15 gr. *each* Pure Chloral Hydrat. and Purified Brom. Pot., and $\frac{1}{8}$ gr. *each* Cannabis Indica and Hyoscyam. Dose—One-half to one fld. drachm in water or syrup.

PAPINE.

The Anodyne principle of Opium; the narcotic and convulsive elements being eliminated. Dose—One fld. drachm, represents $\frac{1}{8}$ gr. morphia in anodyne principle.

IODIA.

A combination of active principles of Stillingia, Helonias, Saxifraga, Menispermum and Aromatics. Each fld. dr. contains 5 grs. Iod. Potas. and 3 grs. Phos. Iron. Dose—One or two fld. drachms as indicated.

BATTLE & CO.

CHEMISTS' CORPORATION,

ST. LOUIS, MO., U. S. A.

ECZEMA.

It is said that 75 per cent. recover with Vinolia—and all are relieved.

"Vinolia" Cream is cooling and soothing for eczematous and other irritable and irritated conditions of the skin as well as mucous membranes. It is a plastic, homogeneous antiseptic, containing "VINOLIA" BASIS (a milled basis composed of simple and intimately associated pure fatty bodies) and a very small proportion of a levigated form of zinc, camphor, and scents, but no cocaine, morphine, belladonna, etc. It is absolutely free from fatty acids and from all objections to be brought against ointments made with mineral and other bases. It is bland, innocuous, emollient, and agrees in every way with the most delicate and diseased skins. It is cleanly to use, and all who prescribe it pronounce it a pleasant and extremely agreeable "cream"—indeed, an exquisite toilet preparation as well as a grateful application.

"Vinolia" will relieve the itching of eczema, of insect bites, chilblains, and various skin affections as soon as applied. Cases of eczema lasting many years have proved amenable to treatment with *Vinolia*, being cured by it in a short time. We have in our possession a very large number of letters from medical men (some of them leading dermatologists) attesting in no uncertain terms to the unquestionable usefulness of VINOLIA for itching and skin irritation. Very many reports favorably after numerous trials made with it in acne rosacea. It has been used with noteworthy advantage for lying-in women, sore nipples, gynæcological examinations and treatment, for urticaria, cold sores, chapped hands, redness, freckles, and sunburn, no matter how produced. Its grateful action renders it unsurpassable in piles and pruritus ani, herpes, styes, blepharitis, intertrigo, irritable abraded ulcers, and prickly heat. Its application to the face in cases of prospective exposure or after shaving is a salutary measure for delicate skins. It agrees with children admirably. "VINOLIA" CREAM is perfectly preservable, harmless to the skin, and renders this tissue elastic, smooth, supple, and natural. It is of service in facial eruptions, which are so often caused and kept up by deleterious cosmetics and hardening soaps. It readily penetrates the outer layer of the skin; is perfectly innocuous, anti-inflammatory, and applicable in all states of the integument. Where there is thickening of the epidermis, and where there are crusts, VINOLIA fulfils all requirements. It has the agreeable odor of the French rose, and forms a striking contrast to the malodorous, rancid ointments so often seen. We repeat, *it will relieve the most intractable itching as soon as applied.*

DIRECTIONS FOR USE.

VINOLIA may be very freely used at any and all times. Irritable surfaces and delicate skins may be washed with warm water and "VINOLIA" SOAP, dried gently with a soft linen towel or silk handkerchief, and covered with a thin layer of "VINOLIA," which should be renewed, where practicable, at least thrice daily.

REPORTS ON VINOLIA.

SIX CASES OF ECZEMA.

GEO. P—, Esq., M. D., reports:—"I have prescribed Vinolia in about half-a-dozen cases of eczema, of varying situation and severity, and in all of them have had reason to be satisfied with the results."

ECZEMA AND ACNE.

M. D. reports:—"I have used Vinolia *always with good results*, especially in cases of eczema and acne."

AFTER TR. IODINE.

M. D. reports:—"I have made extensive use of Vinolia, and find it more valuable every day. My latest use of it has been to allay the irritation of a part which had been painted with tincture of iodine, which it did most effectually. In a case of inflamed acne rosacea, I have also proved it a great comfort. I fancy that its range of usefulness will increase as it becomes better known."

ACNE AND ECZEMA.

E. B. F—, Esq., M. D., reports:—"I have tried Vinolia in cases of acne of the face, and in a case of eczema solare I found it a very efficacious remedy."

PRICES:

- "VINOLIA" CREAM (for Itching, Face Spots, Chilblains, etc.), 50 cts., \$1.00, and \$1.75.
- "VINOLIA" POWDER (for the Toilet, Nursery, Roughness, etc.), 50 cts., \$1.00, and \$1.75.
- "VINOLIA" SOAP, Floral, 15 cts.; Medical, 25 cts.; Toilet, 35 cts.; and Vestal, 85 cts.
- "VINOLIA" DENTIFRICE (English), 75 cts.; (American), 50 cts.

Samples and Pamphlets giving full Medical and Analytical Reports free on Application.
"Vinolia" Soaps and Preparations may be obtained of any good druggist.

BLONDEAU et CIE, 73, 75 & 77 Watts Street, New York.

ENGLISH DEPOT: RYLAND ROAD, LONDON, N. W.

OUR PROPOSITION

DO YOU CARE TO CONSIDER IT?

Or do you prefer to grope along in the darkness, losing valuable time and wasting golden opportunities?

Never mind what the great Doctor Blank says of LONDONDERRY.

You wish to establish your own opinions.

HOW? READ CAREFULLY!

We will furnish water free and pay all costs of chemical analysis of the urine for any clinical test, independently or in comparison with any water, natural or artificial, or any drug used as an anti-lithic!

We Claim that LONDONDERRY LITHIA will cure more cases of Rheumatism than any other water or any drug and stand ready for the test.

LONDONDERRY LITHIA SPRING WATER CO., Nashua, N. H.

CHARLES B. PERKINS & CO., Boston, Selling Agents.

NEW YORK:

CHICAGO:

PHILADELPHIA:

76 Broad Street.

70 State Street.

1516 Chestnut Street.

*MUIR & CO., 1516 Chestnut Street, Philadelphia,
Distributing Agents for Pennsylvania, Baltimore and Washington.*



Phytoline

A POWERFUL ANTI-FAT.

Phytoline is now recognized by the Medical Profession as being the only remedy in the Treatment of Obesity that will absorb the fatty tissue in a great degree without any evil after-effects whatsoever.

A REMEDY
PREPARED FROM THE
ACTIVE PRINCIPLE OF
THE BERRIES OF THE
PHYTOLACCA
DECANDRA.

A VALUABLE PRESCRIPTION FOR OBESITY AND FATTY
DEGENERATION
OF THE HEART.

Rx Phytoline (Walker's)

*Sig.— Take ten drops in
water before and after the three
daily meals, as directed
Dr.*

For Literature and Clinical
Reports address

Dispensed
by Druggists.

WALKER PHARMACAL CO.

St. Louis, Mo. U.S.A.

Products of the

Farbenfabriken vorm F. Bayer & Co.

EUROPHEN

SUBSTITUTE FOR IODOFORM.

AS an antiseptic dressing and cicatrisant in minor and general surgery, and as an eligible application for ulcerative or catarrhal conditions of the membranous tissues, Europhen, or isobutylorthocresoliodide, heads the list of topical remedies. In lesions of a specific character, whether of recent origin or of long standing, Europhen gives prompt and gratifying results. For chronic ulcers of the leg, fistulæ and burns, Europhen is an unrivalled application; and it may be advantageously employed in all cavital troubles ordinarily treated by iodoform, or the antiseptics. Europhen has an agreeable odor; it covers five times more surface than iodoform; and it adheres firmly to lesions to which it is applied. Supplied in ounces.

W H Schieffelin & Co
NEW YORK.

OTHER PRODUCTS OF THE FARBENFABRIKEN

Salophen

THE NEW ANTIRHEUMATIC.

Trional

NEUROTIC, HYPNOTIC.

Sulfonal-Bayer

HYPNOTIC, SEDATIVE.

Losophan

ANTIMYCOTIC, DERMIC STIMULANT.

Aristol

ANTISEPTIC, CICATRISANT.

Piperazine-Bayer

URIC SOLVENT.

Phenacetine-Bayer

ANTIPYRETIC, ANALGESIC.

New descriptive pamphlets on these preparations mailed to applicants.

IMPORTANT MEDICAL WORKS.

Hare's Text-Book of Practical Therapeutics.—New (3d) Ed.

A Text-Book of Practical Therapeutics; With Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By HOBART AMORY HARE, B.Sc., M. D., Professor of Materia Medica and Therapeutics in the Jefferson Medical College of Philadelphia. With special chapters by DRs. G. E. DE SCHWEINITZ, EDWARD MARTIN, J. HOWARD REEVES and BARTON C. HIRST. New (second) and revised edition. In one handsome octavo volume of 689 pages. Cloth, \$3.75; leather, \$4.75. *Just ready.*

We find here directions for the use of the drugs of the most recent introduction, and the very latest results obtained in the treatment of disease by these newer remedies. There is also a list of drugs arranged according to their physiological action, and a list of definitions of the terms used to designate classes of drugs. In a word, this book is a treatise on drugs and other remedial measures, with especial reference to their practical uses; and also a treatise on diseases,

with full directions for the most approved treatment. The book closes with a table of doses and an index of diseases and remedies. There are some books that the student and practitioner alike would do well to purchase; there are others they must have. To this latter class belong the text-books on practical therapeutics. Certainly none can be found either more practical or more complete than this.—*The National Medical Review*, February 2, 1893.

Gray on Nervous and Mental Diseases.—Just Ready.

A Practical Treatise on Nervous and Mental Diseases. By LANDON CARTER GRAY, M. D., Professor of Diseases of the Mind and Nervous System in the New York Polyclinic. In one 8vo. volume of 681 pages, with 163 illustrations. Cloth, \$4.50; leather, \$5.50.

For the practitioner, the very large number of clear illustrations which are presented cannot fail to be of very great service, because in most cases they present very important types of the diseased conditions which they represent. Dr. Gray has endeavored to present the very best therapeutic possibilities which can be offered in the treatment of nervous diseases, and it is but fair to him to say that his book is peculiarly valu-

able, because he has discussed with unusually clear insight into the subject the value of the various remedies which have been employed by physicians in the treatment of nervous diseases. Dr. Gray's effort is practically the first successful one to present to his professional colleagues the best information concerning these points.—*The Therapeutic Gazette*, January 16, 1893.

Taylor's Medical Jurisprudence.—New (12th) Edition.

A Manual of Medical Jurisprudence. By ALFRED S. TAYLOR, M. D., Lecturer on Medical Jurisprudence and Chemistry in Guy's Hospital, London. New American from the twelfth English edition. Thoroughly revised by CLARK BELL, Esq., of the New York Bar. In one octavo volume of 787 pages, with 56 illustrations. *Just ready.* Cloth, \$4.50; leather, \$5.50.

The merits of this work are so well recognized, and its value as a standard text-book for medical instruction and as a trustworthy guide in medico-legal emergencies is so fully appreciated that the mere mention of the appearance of a new edition is quite sufficient as a reminder of its excellent character. A critical review of its contents is superfluous; it is enough to assert with confidence that, as a manual upon the subject of

which it treats, without the pretensions of a full encyclopædia, it is not excelled by any other work on medical jurisprudence in the English language. If the medical practitioner is obliged to limit his literature upon legal medicine to a single volume, he will not make a mistake if he gives his preference to this one, just issued in its eleventh American edition.—*Boston Medical and Surgical Journal*, January 5, 1893.

Whitla's Dictionary of Treatment.

A Dictionary of Treatment; or Therapeutic Index, including Medical and Surgical Therapeutics. By WILLIAM WHITLA, M. D., Professor of Materia Medica and Therapeutics in the Queen's College, Belfast. Revised and adapted to the United States Pharmacopœia. In one square, octavo vol. of 917 pages. Cloth, \$4.00.

The work now before us is a most complete dictionary of therapeutics, arranged alphabetically, and dealing with surgery and obstetrics as well as medicine. Coming from an author so much appreciated as Dr. Whitla, a high standard is to be expected, and such a requirement is fully met. Every subject which we have read is treated judicially and attractively. The

methods recommended are in every instance those of the most scientific modern school, and where rival opinions are current the author states them clearly, and criticises them from his own point of view. The whole work is marked by incisiveness and individuality, its literary style is excellent, and its success is certain.—*Edinburgh Medical Journal*, November, 1892.

Antipuralgos

$O_2C_6H_5 + H_2NOC_6H_5$

A Coal-Tar
Derivative with a
published Formula

Superior to all other of the Coal-Tar derivatives, because it is absolutely safe action, and is a **DEFINITE** compound. It is a safe and certain

ANTI-PYRETIC ANALGESIC AND ANTI-SPASMODIC

A reliable substitute for Quinine, Chloral and the Bromides, in the treatment Neuralgia, Dysmenorrhea and allied disorders.

A succedaneum for Morphia in many affections, including Chorea and Epileps

ANTIPURALGOS is not a depressant to the heart, but acts rather as Germ Destroyer and a Calmative to the nervous centres, and thus through its influence on the circulatory system, **safely lowers blood pressure** hence is particularly useful in the treatment of typhoid, and other continued or low types of fever.

IT RELIEVES PAIN AND OVERCOMES SPASM

Prepared in powder form and in five grain tablets. Sold in one ounce boxes, one dollar per ounce, postpaid. Your druggist ought to keep it. We will send you some free.

KATHARMON CHEMICAL COMPANY, St. Louis, Mo.

A Vitalizing Tonic to the Reproductive System.

SANMETTO

FOR

GENITO-URINARY DISEASES.

 A Scientific Blending of True Santal and Saw Palmetto in a Pleasant Aromatic Vehicle.

SPECIALLY VALUABLE IN

Prostatic Troubles of Old Men—Pre-Senility,
Difficult Micturition—Urethral Inflammation,
Ovarian Pains—Irritable Bladder.

POSITIVE MERIT AS A REBUILDER.

DOSE:—One teaspoonful four times a day.

OD CHEM. CO., NEW YORK.

Platt's Chlorides, The True Disinfectant.

Twelve years of practical daily use, by tens of thousands of intelligent physicians, and by hundreds of thousands of careful housekeepers, has established beyond doubt the value, the usefulness and the superiority of Platt's Chlorides.

An odorless liquid, clean, stainless, powerful, efficient and economical, it is peculiarly adapted to all the sanitary needs of the sick-room, and the hygienic demands of the household.

Platt's Chlorides is sold in quart bottles only, and by nearly every apothecary in every city, town or village in the United States. Should there be any practising physician anywhere who may not, as yet, personally know its value, a sample, with descriptive circulars, etc., will be gladly furnished free.

Address, giving both Post and Express Offices,

HENRY B. PLATT, 36 Platt St., N. Y.



INDICATIONS
The Sequelae of Typhoid Fever
LA GRIFFE
Dyspepsia
Influenza and Allied Complaints present themselves at this season, and suggest to the Profession the value of **ANTI-KAMNIA**, also Combination Tablets
"ANTI-KAMNIA & QUININE"
Containing 2½ Gr. each Antikamnia and Sulph. Quinine.
"ANTI-KAMNIA & SALOL"
Containing 2½ Gr. each Antikamnia and Salol.
***** **SAMPLES FREE**

THE ANTI-KAMNIA CHEMICAL COMPANY, ST. LOUIS, MO. U.S.A.

WANTED, the Address of **EVERY PHYSICIAN**

USING ELECTRICITY.

We Make Everything

For the

Electro-Therapeutist.

Address

J. Kidder Mfg. Co.



820 Broadway, New York City, N. Y.

The only prominent Emulsion of Cod-Liver Oil introduced directly to the medical profession.
It is advertised exclusively in medical journals.

HYDROLEINE.

(HYDRATED OIL.)

Produces rapid increase in Flesh and Strength.

FORMULA.—Each Dose contains:

Pure Cod Liver Oil.....80 m. (drops)	Soda.....1-3 Grains
Distilled Water.....35 "	Salicylic Acid.....1-4 "
Soluble Pancreatin.....5 Grains.	

Recommended and Prescribed by
EMINENT PHYSICIANS Everywhere.
It is pleasant to the Taste and
acceptable to the most delicate Stomach.

IT IS ECONOMICAL IN USE AND CERTAIN IN RESULTS.

HYDROLEINE (Hydrated Oil) is not a simple alkaline emulsion of oleum morrhue, but a hydro-pancreated preparation, containing acids and a small percentage of soda. Pancreatin is the digestive principle of fatty foods, and in the soluble form here used, readily converts the oleaginous material into assimilable matter, a change so necessary to the reparative process in all wasting diseases.

The following are some of the diseases in which **HYDROLEINE** is indicated:

Phthisis. Tuberculosis, Catarrh, Cough, Scrofula, Chlorosis,

General Debility, etc.

TO BRAIN WORKERS of all classes, **HYDROLEINE** is invaluable, supplying as it does, the true brain-food, and being more easily assimilated by the digestive organs than any other emulsion.

The principles upon which this discovery is based have been described in a treatise on "The Digestion and Assimilation of Fats in the Human Body," and "Consumption and Wasting Diseases," by two distinguished London physicians, which will be sent free on application.

SOLD BY DRUGGISTS GENERALLY.

C. N. CRITTENTON,

SOLE AGENT FOR THE UNITED STATES.

116 FULTON STREET, N. Y.

A Sample of Hydroleine will be sent free upon application, to any physician (enclosing business card) in the U. S.

J. FEHR'S COMPOUND TALCUM BABY POWDER,

"THE HYGIENIC DERMAL POWDER"
FOR INFANTS AND ADULTS.

Originally investigated and its therapeutic properties discovered in the year 1868 by Dr. Fehr, and introduced to the Medical and the Pharmaceutical Professions in the year 1873.

COMPOSITION: Silicate of Magnesia with Carbolic and Salicylic Acids.

PROPERTIES: Antiseptic, Antizymotic, and Disinfectant.

Useful as a **GENERAL SPRINKLING POWDER**, with positive Hygienic, Prophylactic, and Therapeutic properties.

GOOD IN ALL AFFECTIONS OF THE SKIN.

PER BOX, PLAIN, 25 Cents; PERFUMED, 50 Cents.

PER DOZ., PLAIN, \$1.75; PERFUMED, \$3.50.

Sold by the Drug Trade Wholesale and Retail Generally.

MANUFACTURER:

JULIUS FEHR, M.D.,

Ancient Pharmacist.

HOBOKEN, N. J.

ONLY ADVERTISED IN MEDICAL AND PHARMACEUTICAL PRINTS.



IN CHRONIC ARTICULAR RHEUMATISM,
in all diseases of mucus membranes, and
pain in the parenchymatous organs, which
were formerly called rheumatism, and at-
tributed to cold, or for which no other cause
has been found, are readily relieved by
HENRY'S TRI-IODIDES.

I PRESCRIBE IT AND FREQUENTLY TAKE IT MYSELF FOR GOUT, O. J. RADEMAKER, M. D., LOUISVILLE.

FORMULAE—Each tablespoonful contains as IODIDES
OF THEIR ALKALOIDS the active constituents of:
THIRTY GRAINS SEMEN COLCHICUM;
THIRTY GRAINS PHYTOLACA DECANDRA;
THIRTY GRAINS SOLANUM DULCAMARA;
AND TEN GRAINS SALICYLATE SODA.

RENZ & HENRY,
CHEMISTS,
LOUISVILLE, KY.

DOSE—One or two dessert-
spoonful every three
hours in water, will re-
lieve the pain of gout,
acute or chronic rheuma-
tism in six hours.

PROPRIETORS ELIXIR THREE CHLORIDES.
IDEAL ALTERATIVE-TONIQUE.

Liebig's Tongaline

TONGALINE

NEURALGIA
RHEUMATISM
NERVOUS
HEADACHE
SCIATICA
LA-GRIFFE
GOUT

SEND FOR CLINICAL REPORTS

MELLIER DRUG COMPANY ST. LOUIS

NUTRITIVE TONICS

ALE AND BEEF "Peptonized" is vastly superior to them all

It is retained and nourishes when the stomach rejects everything else. About twenty-five thousand physicians endorse it. Your druggist ought to know all about it. For \$3.00 we will send one dozen bottles prepaid to any part of the United States.

In ordering, please state name of your Druggist

"What a boon it would be to the Medical Profession if some reliable Chemist would bring out an Extract of Malt in combination with a well-digested or "Peptonized" Beef, giving us the elements of Beef and the stimulating and nutritious portions of Ale."

DR. J. MILNER FOTHERGILL.

THE ALE AND BEEF CO.

Factory, Office and Laboratory

267 W. Seventeenth St., New York



The Demand For

a pleasant and effective liquid laxative has long existed—a laxative that would be entirely safe for physicians to prescribe for patients of all ages—even the very young, the very old, the pregnant woman, and the invalid—such a laxative as the physician could sanction for family use because its constituents were known to the profession and the remedy itself had been proven to be prompt and reliable in its action, as well as pleasant to administer and never followed by the slightest debilitation. After a careful study of the means to be employed to produce such

A Perfect Laxative

the California Fig Syrup Company manufactured, from the juice of True Alexandria Senna and an excellent combination of carminative aromatics

with pure white sugar, the laxative which is now so well and favorably known under the trade name of “Syrup of Figs.” With the exceptional facilities, resulting from long experience and entire devotion to the one purpose of making our product unequalled, this demand for the perfect laxative

is met by Our Method

of extracting the laxative properties of Senna without retaining the griping principle found in all other preparations or combinations of this drug. This method is known only to us, and all efforts to produce cheap imitations or substitutes may result in injury to a physician’s reputation, and will give dissatisfaction to the patient; hence, we trust that when physicians recommend or prescribe “Syrup of Figs” (Syr. Fici Cal.) they will not permit any substitution. The name “Syrup of Figs” was given to this laxative, not because in the process

of Manufacturing

a few figs are used, but to distinguish it from all other laxatives, and the United States Courts have decided that we have the exclusive right to apply this name to a laxative medicine. The dose of

“SYRUP OF FIGS”

as a laxative is one or two teaspoonfuls given preferably before breakfast or at bed time. From one-half to one tablespoonful acts as a purgative, and may be repeated in six hours if necessary.

“Syrup of Figs” is never sold in bulk. It is put up in two sizes to retail at fifty cents and \$1.00 per bottle, and the name “Syrup of Figs” as well as the name of the California Fig Syrup Company is printed on the wrappers and labels of every bottle.

CALIFORNIA FIG SYRUP COMPANY

SAN FRANCISCO, CAL.

LOUISVILLE, KY.

NEW YORK, N. Y.

DR. STRONG'S SANITARIUM

SARATOGA SPRINGS, N. Y.

ESTABLISHED 1835.

It receives persons recommended to it by their home physician for TREATMENT, CHANGE, REST or RECREATION, and places them under well-regulated hygienic conditions, so helpful in the treatment of chronic invalids or the overtaxed.

For TREATMENT.—In addition to the ordinary remedial agents it has a Sun Parlor and Promenade on the roof; Turkish, Russian, Roman, with Needle Bath and Plunge, Sulphur, Electro thermal, the Continental Douche, and all Hydropathic Baths; Vacuum Treatment, Swedish Movements, Massage, Pneumatic Cabinet, Inhalations of Medicated, Compressed and Rarified Air, Electricity in all its various forms, Gymnastics, and Saratoga Mineral Waters under the direction of a staff of educated physicians.

For CHANGE.—This institution is located in a phenomenally dry, tonic, quiet and sedative atmosphere, in the lower arc of the Adirondack zone and within the Snow belt.

For REST.—It offers a well-regulated and quiet home, with elevator, electric bells, open fire-places, steam, thorough ventilation and suites of rooms with baths. The depressing air of invalidism is avoided.

For RECREATION.—To prevent introspection, are household games, billiards, croquet, lawn tennis, elegant sleighing, snow-shoeing, etc.

Physicians are invited to inspect the institution at their convenience. A liberal discount to physicians and their families. Send for Illustrated Circular.

Address DR. S. E. STRONG, THE SANITARIUM,

90 CIRCULAR STREET.

THE RICHARD GUNDRY HOME, CATONSVILLE, MD.

A private institution for Nervous and Mental Diseases, and Select Cases of Alcoholic and Opium Habits. Home Comforts. Beautiful Grounds, 600 feet above tide-water. Terms Reasonable. Special attention to acute cases. The Home is conducted by Mrs. Dr. R. Gundry and Dr. R. F. Gundry, and a corps of consulting physicians.

For further information, address

DR. R. F. GUNDURY, Box 107, CATONSVILLE, MD.

CONSULTING PHYSICIANS: Prof. Henry M. Hurd, Physician-in-Charge, Johns Hopkins Hospital; Prof. George J. Preston, Baltimore; Prof. George H. Rohé, Maryland Hospital, Catonsville, Md.; Prof. Dr. C. G. W. MacGill, Catonsville, Md.

REFERENCES: Dr. John B. Chapin, Pennsylvania Hospital for Insane, Philadelphia; Prof. William Osler, Physician-in-Chief, Johns Hopkins Hospital; Dr. W. W. Godding, Government Hospital, Washington, D. C.; Francis White, Esq., Baltimore, Md.

DR. WILLIAM A. HAMMOND'S PRIVATE HOSPITAL

FOR DISEASES OF THE NERVOUS SYSTEM,
WASHINGTON, D. C.

The Hospital is situated on Columbia Heights, at the corner of Fourteenth Street and Sheridan Avenue. The position is the highest in the immediate vicinity of Washington. The soil is dry and all the surroundings are free from noxious influences. The Fourteenth-street cable cars run almost to the door. The

building is very large, and in its construction every sanitary requirement has been fulfilled. The number of Patients is limited to twenty. Electricity in all its forms, baths, douches, massage, inhalations, nursing, etc., are provided as may be required by patients, in addition to such other medical treatment as may be deemed advisable. The building is heated throughout by steam. For further information DR. HAMMOND can be addressed at the



Hospital, 14th Street and Sheridan Avenue, Washington, D. C.

THE PUREST AND MOST ACTIVE PEPSIN
EVER INTRODUCED.

WEBBER-PEPSIN

S. & D.

STANDARD 1 TO 6000.

*A SOLUBLE, NON-HYGROSCOPIC, INODOROUS, PERMA-
NENT PEPSIN.*

Dose: $\frac{1}{8}$ to 2 Grains,

The Webber-Pepsin will completely digest 6000 times its weight of coagulated egg-albumen in accordance with the conditions of the U. S. P. test or that of the National Formulary.

It is not a Peptone-Pepsin yet it is perfectly soluble, being free from mucus and inert putrescible matter, and is so palatable that the most fastidious patient will take it readily.

It is entirely free from septic contaminations, or other products of decomposition.

Physicians will appreciate these several advantages as possessed solely by the Webber-Pepsin.

Although further investigations based upon the Webber process have enabled us to produce Pepsin capable of digesting from 20,000 to 30,000 times its weight of coagulated egg-albumen, we have adopted 1 to 6000 as our standard for the Webber-Pepsin because this already far exceeds the digestive power of any other Pepsin yet introduced, and especially because the production of a Pepsin of a still higher digestive power disproportionately increases its cost.

The Webber-Pepsin is offered in Granular form and in Scales, but unless otherwise specified, we invariably furnish the GRANULAR form.

Samples furnished upon application.

MANUFACTURED ONLY BY

SHARP & DOHME,

BRANCH HOUSES:
NEW YORK.
CHICAGO.

Baltimore, Md., U. S. A.

Note Relative to the Buffalo Lithia Water.

WILLIAM A. HAMMOND, M. D., Washington, D. C.,

Surgeon-General U. S. Army (retired), formerly Professor of Diseases of the Mind and Nervous System in the University of New York, etc.

There is a point in relation to the therapeutical efficacy of the Buffalo Lithia Water, which has not as yet, I think, received sufficient attention. It is well known that many cases of diseases of the nervous system are complicated with lithæmia, and that unless this condition is removed a cure is very often retarded and not infrequently entirely prevented. It is quite commonly the case that in cerebral congestion producing insomnia, nervous prostration, resulting from overmental work or much emotional disturbance, and in epilepsy (to say nothing of many cases of insanity), an excess of uric acid in the blood is often observed. This state appears to be altogether independent of the character of the food, for no matter how careful the physician may be in regard to the diet of his patient, the lithæmic condition continues. I have tried to overcome this persistence by the use of phosphate of ammonia and other so-called solvents for uric acid, but without notable effect.

Several years ago, however, I began to treat such cases with Buffalo Lithia Water with a result that was as astonishing to me as it was beneficial to the patient, so that now in all cases of nervous diseases under my charge in which there is an excess of uric acid in the blood I use the Buffalo Lithia Water in large quantities. By this I mean that I do not have the patient drink merely a tumbler or two in the course of the day, but that I flood him, so to speak, with the water, making him drink a gallon or even more, in the twenty-four hours. By this course the urine after a few days ceases to deposit uric acid crystals on standing, the morbid irritability of the patient disappears, the tongue becomes clean, the wandering pains in the head are abolished, and the system is rendered much more amenable to the special treatment which may be necessary for the cure of the disease from which the patient suffers.

I have tried Carbonate of Lithia dissolved in water in various proportions, but it certainly does not, in cases to which I refer, have the same effect as Buffalo Lithia Water.

WASHINGTON, D. C., January 25th, 1892.



UNIVERSITY OF VIRGINIA

JAMES L. CABELL, A. M., M. D., LL. D., *Professor of Physiology and Surgery in the Medical Department of the University of Virginia; President of the National Board of Health, etc., etc., says:—*
“The Buffalo Lithia Water, Spring, No. 2, contains in notable quantities two of the alkalies which are accredited as extremely valuable in the treatment of Gout, Lithiasis and Liver Affections. I refer to the Carbonates of Potash and Lithia. It is now well known that both of these alkaline carbonates have an ascertained value in cases of

URIC ACID DIATHESIS CONNECTED WITH GRAVEL

and in cases of Chronic Gout, because of their affinity for Uric Acid and the great solubility of the salts which are formed by their union with that acid. It is, however, held by eminent medical authorities, that ‘the beneficial effects of alkalies are not due to their neutralizing acidity, or to any direct action upon Uric Acid,’ but that they ‘seem to do good by combating the pathological state on which the formation of Uric Acid depends.’ We are not, however, left to theory, as to the action of this water, as numerous testimonials from the profession seem to have established the fact that it has already accomplished results, such as its composition would indicate. It is **a remedy of decided efficiency in the Lithæmic condition.**”

Water in cases of one dozen half-gallon bottles, \$5.00, f. o. b. here. For sale by all first-class druggists.

THOMAS F. GOODE, PROPRIETOR
BUFFALO LITHIA SPRINGS, VA.

AN INCOMPARABLE ADVANCE IN
IRON MEDICATION.

IRON-PEPTONATE---“Dieterich”

ALSO

IRON-MANGANESE---“Dieterich.”

R
LIQ. FERRI. PEPT.
“Dieterich.”

Original Bottle. $\overline{\text{S}}$ xvi.

DOSE: Teaspoonful to
a tablespoonful 3 times
a day, in wine or milk.

Dr.

CONTAINS: 0,42% Fe.

ABOVE

Preparations combine all the
virtues of known Iron Prepara-
tions, without having any of
their disadvantages.

R
Liq. Ferro. Mangan.
“Dieterich.”

Original Bottle. $\overline{\text{S}}$ xvi.

DOSE: Teaspoonful to
a tablespoonful 3 times
a day, in wine or milk.

Dr.

CONTAINS: $\begin{cases} 0,6\% \text{ Fe.} \\ 0,1\% \text{ Mn.} \end{cases}$

Can be had of all Druggists in the U. S. and Canada.

When Prescribing please specify “ORIGINAL BOTTLES.”

Physicians desiring to pay expressage can obtain Original Bottles upon application.

Literature Free.

REINSCHILD CHEMICAL CO.

15 Platt Street, New York.

A NEW DEPARTURE IN THERAPEUTICS.

Physiological Remedies: Desiccated Thyroids, Cerebrin.

As a result of the well-known investigation of Dr. Brown-Sequard and other eminent therapeutists, materia medica has recently been largely extended by resort to the use of products representative of certain glands or tissues of the animal economy.

As we have always made the manufacture of the digestive ferments a specialty, and enjoy every facility for the preparation of products of this character, we will undertake to supply some of these new remedies, of which we now have ready:

DESICCATED THYROIDS

In the form of an impalpable powder, representing in permanent form the thyroid glands of sheep. This product is of such strength that 15 grains represent one gland of average size. It is highly recommended in the treatment of Myxœdema.

CEREBRIN,

Prepared after the formula of Dr. William A. Hammond. Put up in glass-stoppered ounce vials.

[While Dr. Hammond has recommended maceration of the brains for six months, we have modified his method in such manner that we are enabled to thoroughly extract the crude material in as many days.]

One serious drawback to the use of these products has been the difficulty in getting the necessary crude material, and the disagreeable character of the work involved in their preparation.

Again, it is only by the most scrupulous attention to the minutest details that asepsis in the finished article can be secured and assured.

The well-known reputation of our house is a guarantee of our ability and intention to fulfill every requisite. We do not doubt that many interesting results will follow the application of these new physiological remedies.

It is our purpose to extend this list from time to time. Descriptive literature of those announced will be supplied on application.

PARKE, DAVIS & CO.,

DETROIT, NEW YORK, KANSAS CITY, AND WALKERVILLE, ONT.

PONCA COMPOUND

UTERINE ALTERNATIVE

Metritis. | Menorrhagia. | Leucorrhoea. | Dysmenorrhoea. | Painless Pregnancy
Endo-Metritis. | Metrorrhagia. | Subinvolution. | Ovarian Neuralgia. | After-Pains.

FORMULA.—Each Tablet Contains:

Ext. Ponca, 3 grs.; Ext. Mitchellia Repens, 1 gr.;
Caulophyllin, $\frac{1}{4}$ gr.; Helonin, $\frac{1}{4}$ gr.; Viburnin, $\frac{1}{4}$ gr.

DOSE:—One Tablet after each Meal
before Retiring.

100 TABLETS MAILED ON RECEIPT OF \$1.00.
MELLIER DRUG COMPANY, 109 Walnut Street, ST. LOUIS

WANTED—SALESMEN.

We have still some territory at our disposal for the sale of **A SYSTEM OF PRACTICAL THERAPEUTICS**, which will be published in three very large octavo volumes, the first two of which are now ready. *The success of our salesmen has, so far, been most gratifying.*

Those who have sold **Pepper's System of Medicine**, or are acquainted with that standard treatise, will find the **THERAPEUTICS** practically supplementary to that work, and we anticipate that every physician who possesses **Pepper's System** will also purchase the **THERAPEUTICS**.

Our salesmen carry specimens of our other standard subscription works, also, viz.: *Taylor's Atlas of Venereal and Skin Diseases*, *The American Systems of Gynecology and Obstetrics*, *The National Medical Dictionary* and *Pepper's System of Medicine*.

We shall be glad if physicians will direct the attention of honest, competent men to this field of work. Practitioners desirous of resigning practice can earn a good living. Medical book salesmen are not "canvassers." Address the Manager, Subscription Department,

LEA BROTHERS & Co.,

706 & 708 Sansom Street, PHILADELPHIA.

WALNUT LODGE HOSPITAL, HARTFORD, CONN.

Organized in 1880 for the special medical treatment of **ALCOHOL AND OPIUM INEBRIATES**.

Elegantly situated in the suburbs of the city, with every appointment and appliance for the treatment of this class of cases, including *Turkish, Russian, Roman, Saline and Medicated Baths*. Each case comes under the direct personal care of the physician. Experience shows that a large proportion of these cases are curable, and all are benefited from the application of exact hygienic and scientific measures. This institution is founded on the well-recognized fact that *Inebriety is a disease, and curable*, and all these cases require rest, change of thought and living, in the best surroundings, together with every means known to science and experience to bring about this result. Only a limited number of cases are received. Applications and all inquiries should be addressed,

T. D. CROTHERS, M.D., Sup't Walnut Lodge, Hartford, Conn

LEA BROTHERS & CO'S MEDICAL AND SURGICAL PUBLICATIONS

Flint's Practice.—Sixth Edition.

A Treatise on the Principles and Practice of Medicine. Designed for the use of Students and Practitioners of Medicine. By **AUSTIN FLINT, M.D., LL.D.**, Professor of the Principles and Practice of Medicine and of Clinical Medicine in Bellevue Hospital Medical College, New York. New (sixth) edition, thoroughly revised and re-written by the Author, assisted by **WILLIAM H. WELCH, M.D.**, Professor of Pathology, Johns Hopkins University, Baltimore, and **AUSTIN FLINT, JR., M.D., LL.D.**, Professor of Physiology, Bellevue Hospital Medical College, New York. In one very handsome octavo volume of 1160 pages, with illus. Cloth, \$5.50; leather, \$6.50; half Russia, \$7.00.

A new edition of a work of such established reputation as **Flint's Medicine** needs but few words to commend it to notice. It may in truth be said to embody the fruit of his labors in clinical medicine, ripened by the experience of a long life devoted to its pursuit. America may well be proud of having produced a man whose indefatigable industry and gifts of genius have done so much to advance medicine; and all English-reading students must be grateful for the work which

he has left behind him. It has few equals, either in point of literary excellence or of scientific learning, and no one can study its pages without being struck by the lucidity and accuracy which characterize them. It is qualities such as these which render it so valuable for its purpose, and give it a foremost place among the text-books of this generation.—*The London Lancet*, March 12, 1887.

706, 708 & 710 Sansom Street, Philadelphia.

BELLEVUE HOSPITAL MEDICAL COLLEGE,

CITY OF NEW YORK.

SESSIONS OF 1893-94.

The REGULAR SESSION begins on Monday, September 25, 1893, and continues for twenty six weeks. During this session, in addition to the regular didactic lectures, two or three hours are daily allotted to clinical instruction. Attendance upon three regular courses of lectures is required for graduation. The examinations of other accredited Medical Colleges in the elementary branches are accepted by this College.

The SPRING SESSION consists of daily recitations, clinical lectures and exercises and didactic lectures on special subjects. This session begins March 26, 1894, and continues until the middle of June.

The CARNEGIE LABORATORY is open during the collegiate year, for instruction in microscopical examinations of urine, practical demonstrations in medical and surgical pathology, and lessons in normal histology and in pathology, including bacteriology.

For the annual Circular, giving requirements for graduation and other information, address Prof. AUSTIN FLINT, Secretary, Bellevue Hospital Medical College, foot of East 26th St., New York City.

ST. LOUIS MEDICAL COLLEGE.

MISSOURI DENTAL COLLEGE.

Departments of Washington University, St. Louis, Mo.

The Fifty-second Annual session of the Medical College and the Twenty-eighth Annual session of the Dental College begins September 26th, 1893.

Attendance upon three full annual courses is required of all candidates for examination for a degree.

The courses of study are graded and include systematic work in the laboratories and clinics by every student.

The programme of studies is so arranged that a student can obtain the degree in both Departments in four years, by stating his purpose and taking additional work in each term.

For the Annual Announcement of the College, address

E. M. SENSENEY, M. D., Secretary St. Louis Medical College, 2829 Washington Avenue.

A. H. FULLER, M. D., D. D. S., Secretary Missouri Dental College, 2602 Locust Street, or

H. H. MUDD, M. D., Dean, 2604 Locust Street.

YALE UNIVERSITY

Offers candidates for the degree of DOCTOR of MEDICINE a graded course of study, consisting of PERSONAL INSTRUCTION in Class-room, Laboratory and Clinic.

For Announcements of the course, address

PROF. HERBERT E. SMITH,

Dean of the Faculty of Medicine, Yale University, NEW HAVEN, CONN.

UNIVERSITY OF COLORADO (BOULDER)

MEDICAL DEPARTMENT.

The next term begins September 7, 1892. Three years' graded course. Instruction during the first year is given in Boulder, and during the second and third years in Denver, owing to the superior clinical advantages of the latter. Practical Laboratory work in Chemistry, Histology and Pathology. The University of Colorado gives free tuition in all of her departments. For catalogue and further information, address

H. W. McLAUTHLIN, M. D., Secretary, 1717 Stout St., Denver, Colo.

WOMAN'S MEDICAL COLLEGE of the NEW YORK INFIRMARY.

321 EAST FIFTEENTH STREET, NEW YORK.

Season 1892-'93 opens October 1, 1892. Three years' graded course. Instruction in Lectures, Clinics, Recitations and practical work, under supervision, in Laboratories and Dispensary of College and New York Infirmary. Operations and clinics in most of the City Hospitals and Dispensaries open to women students. For catalogues, etc., address

EMILY BLACKWELL, M. D., Dean, 321 East Fifteenth Street, New York.

BOYLSTON MEDICAL PRIZE QUESTIONS.

April, 1892. I. *Results of Original Work in Anatomy, Physiology or Pathology.* \$200. II. *Ætiology of Hospital Gangrene.* \$100. April, 1893. I. As 1892. \$200. II. *Clinical and Experimental Investigation of Uræmia.* \$200.

FOR PARTICULARS, APPLY TO

W. F. WHITNEY, M. D., Sec'y Harvard Medical School, Boston, Mass.

SYR. HYPOPHOS. CO., FELLOWS

Contains the Essential Elements of the Animal Organization—Potash and Lime;
The Oxidising Agents—Iron and Manganese;
The Tonics—Quinine and Strychnine;
And the Vitalizing Constituent—Phosphorus; the whole combined in the form of a

Syrup with a Slightly Alkaline Reaction.

It Differs in its Effects from all Analogous Preparations; and it possesses the important properties of being pleasant to the taste, easily borne by the stomach, and harmless under prolonged use.

It has Gained a Wide Reputation, particularly in the treatment of Pulmonary Tuberculosis, Chronic Bronchitis, and other affections of the respiratory organs. It has also been employed with much success in various nervous and debilitating diseases.

Its Curative Power is largely attributable to its stimulant, tonic, and nutritive properties, by means of which the energy of the system is recruited.

Its Action is Prompt; it stimulates the appetite and the digestion, it promotes assimilation, and it enters directly into the circulation with the food products.

The prescribed dose produces a feeling of buoyancy, and removes depression and melancholy; *hence the preparation is of great value in the treatment of mental and nervous affections.* From the fact, also, that it exerts a double tonic influence, and induces a healthy flow of the secretions, its use is indicated in a wide range of diseases.

NOTICE—CAUTION.

The success of Fellows' Syrup of Hypophosphites has tempted certain persons to offer imitations of it for sale. Mr. Fellows, who has examined samples of several of these, *finds that no two of them are identical*, and that all of them differ from the original in composition, in freedom from acid reaction, in susceptibility to the effects of oxygen when exposed to light or heat, *in the property of retaining the strychnine in solution*, and in the medicinal effects.

As these cheap and inefficient substitutes are frequently dispensed instead of the genuine preparation, physicians are earnestly requested, when prescribing the Syrup, to write "Syr. Hypophos. *Fellows.*"

As a further precaution, it is advisable that the Syrup should be ordered in the original bottles; the distinguishing marks which the bottles (and the wrappers surrounding them) bear, can then be examined, **and** the genuineness—or otherwise—of the contents thereby proved.

Medical Letters may be addressed to:

Mr. FELLOWS, 48 Vesey Street, New York.

"H. V. C."

Hayden's Viburnum Compound.

—THE STANDARD PRESCRIPTION IN THE—

Ailments of Women

—AND IN—

Obstetric Practice.

A powerful **Antispasmodic, Nervine and Uterine Tonic.** Perfectly safe, prompt and reliable. Free from all **Narcotics, Coal Tar Products** and other **Poisons**, and every way superior to Ergot in all cases where that uncertain and dangerous drug is indicated. The competent obstetrician will **never** employ Ergot who is familiar with the action of "H. V. C." In **Dysmenorrhea, Menorrhagia, Threatened Abortion** and Convulsions, it is the perfection of remedies. The most accomplished Gynecologists in the United States employ and recommend Hayden's Viburnum Compound, and we have great pleasure in referring to any of them.

For our large Hand-Book, **Theory, Practice and Demonstration free**, send your address.

Write only for "**H. V. C.**" and accept no substitutes or imitations. Put up in 4-oz., 10-oz. and 16-oz. bottles, and dispensed by all reliable druggists.

The New York Pharmaceutical Company,
BEDFORD SPRINGS, MASS.

McARTHUR'S SYRUP

(Syr. Hypophos. Comp., C. P. McArthur.)

Is a Standard and Reliable Preparation,
as proved by the test of years.

The reason why it has attained this enviable reputation is because of its *chemical purity* and the *scrupulous care* taken in its preparation. It is not a conglomerate mass of poly-pharmacy, but embodies the valuable therapeutical properties of the hypophosphites of lime and soda, without other objectionable ingredients.

A Reconstructive and Tonic for Convalescents.

Physicians are sending us testimonials, daily, of the excellence of *McArthur's Syrup* as a chemical preparation, a prophylactic or a therapeutic.

Used with great success in *Consumption, Tuberculosis, Scrofula, Cough, Brain Exhaustion, Alcoholism, Impotence and General Debility.*

Endorsed by PROF. H. L. BYRD, and PROF. JOHN S. LYNCH, of Baltimore; J. MONTFORT SCHLEY, M. D., of New York; GERTRUDE G. BISHOP, M. D., of Brooklyn; JOHN DIXWELL, M. D., of Boston; F. LE SIEUR, M. D., and W. F. WAUGH, M. D., of Philadelphia, and many more Eminent Physicians.

For successful Hypophosphite treatment prescribe thus: Syr. Hypophos. Comp., C. P. McArthur.

Sold only in 12-ounce Bottles, never in bulk.

Send for pamphlet treating on the use of the Hypophosphites. It contains many testimonials.

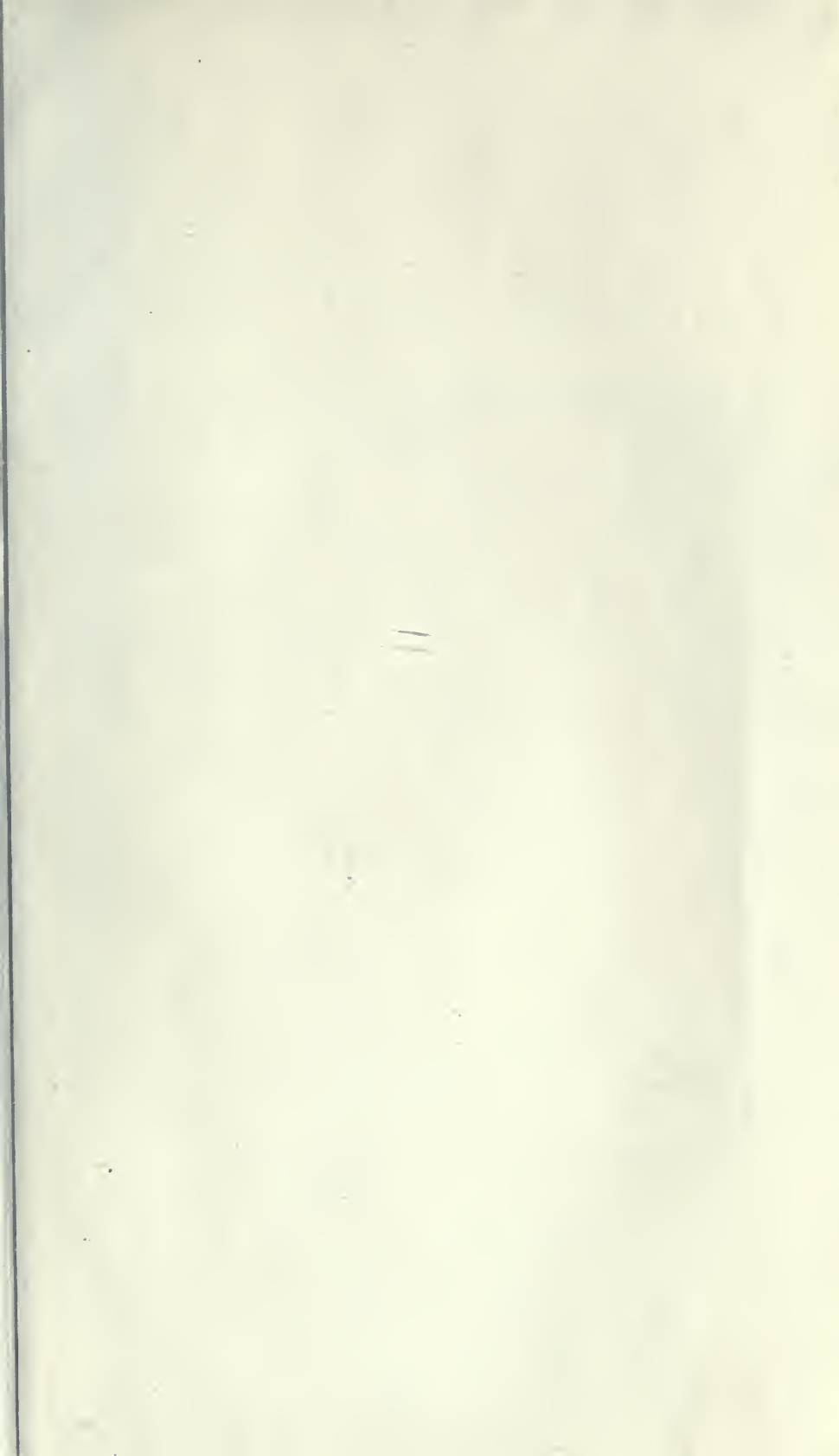


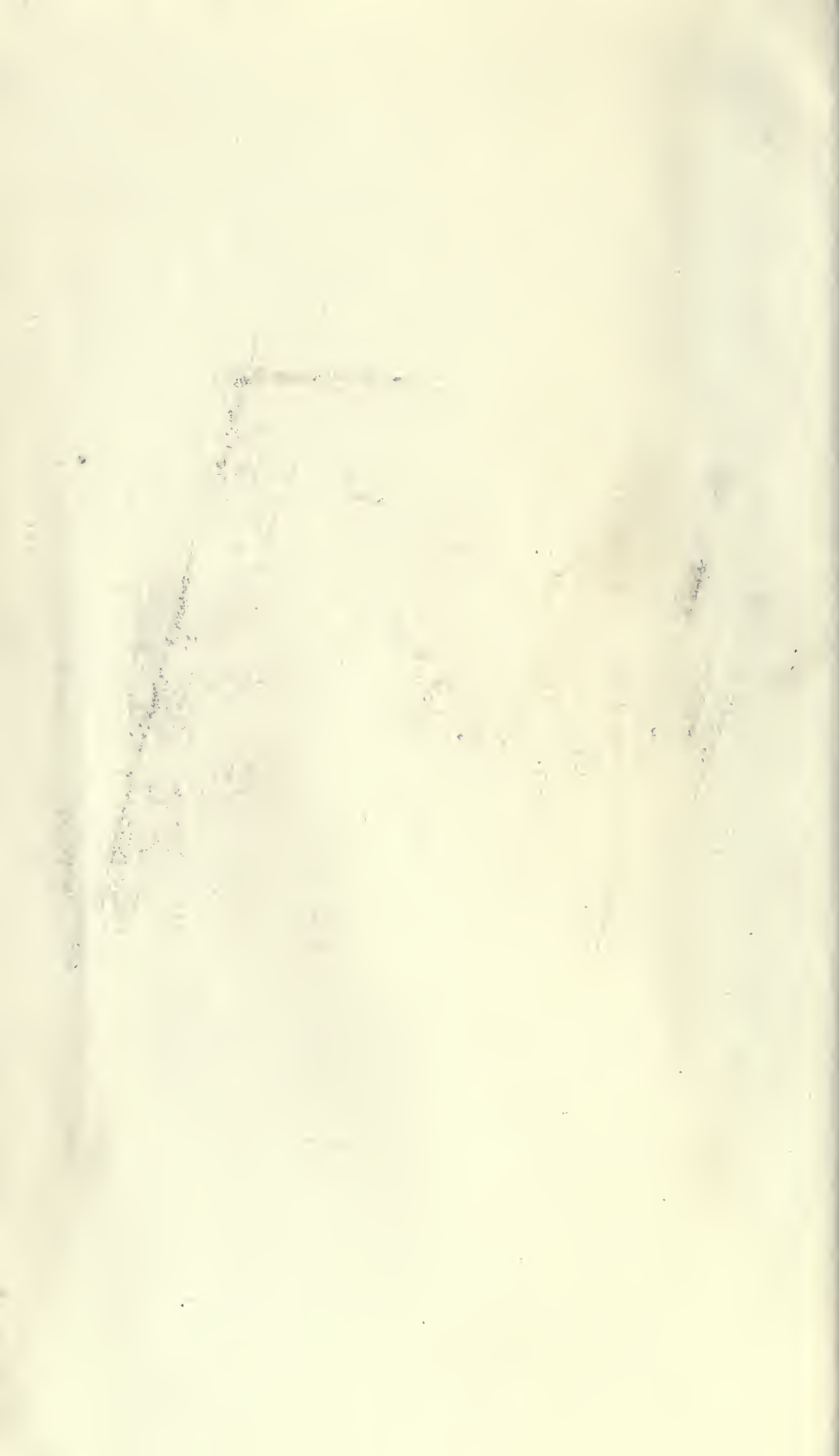
McARTHUR HYPOPHOSPHITE CO.

2502 4

BOSTON.







 UNIVERSITY OF TORONTO LIBRARY [JY]

DUE  Aug. 13

CALL NUMBER R
11
A5

AUTHOR Amer. J. F. Mc

TITLE Medical Sciences

VOLUME 105

1893

Aug. 3 2011

HCB
N1C3

BER Aug. 3 2011

STORAGE

